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Ontario - Legislative Assembly

# SESSIONAL PAPERS

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## VOL. LV—PART VI

## FOURTH SESSION

OF THE

# FIFTEENTH LEGISLATURE

OF THE

## PROVINCE OF ONTARIO

SESSION 1923

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# LIST OF SESSIONAL PAPERS

PRESENTED TO THE HOUSE DURING THE SESSION.

| TITLE. | No. | REMARKS. |
|---|---|---|
| Accounts, Public | 1 | *Printed.* |
| Agricultural College, Report | 30 | " |
| Agricultural Development Board, Report | 69 | *Not Printed.* |
| Agricultural and Experimental Union, Report | 32 | *Printed.* |
| Agricultural Societies, Report | 42 | " |
| Agriculture, Report of Department | 29 | " |
| Agriculture, Report of Statistics Branch | 46 | " |
| Algonquin Park, appointment | 101 | *Not Printed.* |
| Algonquin Park, appointment | 102 | " |
| Archives, Report | 52 | " |
| Athletic Commission, Report | 76 | " |
| Auditor's Report | 54 | *Printed.* |
| Beekeepers' Association, Report | 37 | *Printed.* |
| Bell, George, K.C., correspondence | 71 | *Not Printed.* |
| Births, Marriages and Deaths, Report | 20 | *Printed.* |
| Cadieux, Fortunat, correspondence *re* removal from Office | 97 | *Not Printed.* |
| Calhoun, W. W., correspondence *re* accident | 67 | " |
| Central Ontario System, Report on | 79 | " |
| Children, Neglected and Dependent, Report | 27 | " |
| Civil Service, Commissioner, Report | 91 | *Printed.* |
| Clement, Mansford H., correspondence *re* accident | 77 | *Not Printed.* |
| Cochrane area, Estimates, etc., *re* cruises | 85 | " |
| Crown Timber Act, Report of Commission | 63 | " |
| Dairymen's Associations, Report | 38 | *Printed.* |
| Devine, James F., correspondence *re* accident | 92 | *Not Printed.* |
| Division Courts, Report | 5 | *Printed.* |
| Education, Report | 17 | *Printed.* |
| Education, Orders-in-Council | 66 | *Not Printed.* |
| Elections, By-, Return from Records | 51 | *Printed.* |
| Entomological Society, Report | 36 | " |
| Estimates | 2 | " |
| Experimental Union, Report | 32 | " |
| Extra-mural Employment, Report under | 60 | " |
| Friendly Societies, Report | 11 | *Printed.* |
| Fruit Growers Association, Report | 44 | " |

| Title. | No. | Remarks. |
|---|---|---|
| Game and Fisheries, Report | 14 | *Printed.* |
| Government Dispensary, correspondence | 71 | *Not Printed.* |
| Guelph Radial Railway, Report on | 79 | *Printed.* |
| Halliday, C. J., correspondence *re* injuries | 96 | *Not Printed.* |
| Hamilton Bay, licenses to fish | 87 | " |
| Harbinger & Allen, Report *re* Department of Lands and Forests | 83 | " |
| Health, Report of Board of | 21 | *Printed.* |
| Highway Improvement, Report | 15 | " |
| Highway Improvement Fund, statement showing sums credited to | 74 | *Not Printed.* |
| Homewood Sanatorium, Report of Board of Visitors | 78 | " |
| Horticultural Societies, Report | 43 | *Printed.* |
| Hospitals and Charities, Report | 25 | " |
| Housing, Report | 40 | " |
| Huston, Orville, Report of Commission | 56 | *Not Printed.* |
| Hydro-Electric Power Commission, Report | 49 | *Printed.* |
| Hydro-Electric Power Commission, Reports on accounts, Clarkson & Co. | 75 | " |
| Hydro-Electric Commission, permanent staff | 80 | *Not Printed.* |
| Insane and Epileptic, Hospitals, Report | 23 | *Printed.* |
| Insurance, Report | 10 | " |
| Labour Department, Report | 16 | *Printed.* |
| Lake Disaster Fund, Report | 61 | *Not Printed.* |
| Lands and Forests, Report | 3 | *Printed.* |
| Legal Offices, Report | 6 | " |
| Librarian, Report | 53 | *Not Printed.* |
| License Commissioners, Report of Board of | 28 | *Printed.* |
| Live Stock Branch, Report | 39 | " |
| Loan Corporations, Report | 12 | " |
| MacDonald, Allan, correspondence *re* appointment of | 62 | *Not Printed.* |
| Mines, Department of, Report | 4 | *Printed.* |
| Minimum Wage Board, Report | 89 | " |
| Mothers' Allowances, Report | 98 | " |
| Municipal Affairs, Report | 47 | " |
| Municipal Auditor, Report | 8 | " |
| Northern Ontario Fire Investigation, evidence, etc. | 81 | *Not Printed.* |
| Ontario Athletic Commission, statement | 76 | *Not Printed.* |
| Ontario Provincial Police, Report | 84 | *Printed.* |
| Ontario Railway and Municipal Board, Report | 50 | " |
| Ordinary Revenue, Return showing | 73 | *Not Printed.* |
| Osgoode Hall Commission, Report | 57 | " |

| Title. | No. | Remarks. |
|---|---|---|
| Parole Board, Report of | 24 | *Printed.* |
| Pension Reserves, computing tables | 95 | *Not Printed.* |
| Pepall, A. H., correspondence | 64 | " |
| Prison and Reformatories, Report | 26 | *Printed.* |
| Provincial Municipal Auditor, Report | 8 | " |
| Public Accounts | 1 | " |
| Public Highways, Report | 15 | " |
| Public Service Superannuation Board, Report | 88 | " |
| Public Works, Report | 13 | " |
| Queen Victoria N. Falls Park, Report | 9 | *Printed.* |
| Registrar-General, Report | 20 | *Printed.* |
| Registry Offices, Report | 7 | " |
| Rural, Public and Separate Schools, Grants to | 70 | *Not Printed.* |
| Sandwich, Windsor and Amherstburg Railway and Windsor and Tecumseh Electric Railway, Report | 90 | *Not Printed.* |
| Scott, Harry S., correspondence *re* death of | 99 | " |
| Secretary and Registrar, Report | 19 | *Printed.* |
| Seguin, Eugene, correspondence *re* accident | 93 | *Not Printed.* |
| Sheriffs, Report of Commission on | 57 | " |
| Shevlin-Clarke, correspondence *re* action against | 68 | " |
| Soldiers' Aid Commission, Report | 103 | " |
| Statistics Branch Agriculture | 46 | " |
| Statute distribution | 100 | " |
| Sucession Duties, return *re* estates | 82 | " |
| Temiskaming and N. O. Railway, Report | 48 | *Printed.* |
| Thunder Bay District, Estimates submitted | 72 | *Not Printed.* |
| Toronto University, Report | 18 | *Printed.* |
| Toronto University, Rockfeller Foundation Gift | 65 | *Not Printed.* |
| Toronto University, meeting of Board | 86 | " |
| United Press Limited, Contract *re* printing, etc | 58 | *Printed.* |
| United Press Limited, Contract *re* binding, etc | 59 | " |
| Vegetable Growers' Association, Report | 34 | *Printed.* |
| Women's Institutes, Report | 41 | *Printed.* |
| Workmen's Compensation Board, Report | 55 | " |
| Workmen's Compensation Board, correspondence *re* accident to Mansford H. Clement | 77 | *Not Printed.* |
| Workmen's Compensation Board, correspondence *re* Spadina House | 94 | " |
| Workmen's Compensation Board, tables *re* Pension Reserves | 95 | " |
| Workmen's Compensation Board, correspondence *re* accident to W. W. Calhoun | 67 | " |

| Title. | No. | Remarks. |
|---|---|---|
| Workmen's Compensation Board, correspondence *re* accident to James F. Devine | 92 | *Not Printed.* |
| Workmen's Compensation Board, correspondence *re* injuries received by C. J. Halliday | 96 | " |
| Workmen's Compensation Board, correspondence *re* accident to Eugene Seguin | 93 | " |
| Workmen's Compensation Board, correspondence *re* death of Harry S. Scott | 99 | " |

# LIST OF SESSIONAL PAPERS

**Arranged in Numerical Order with their Titles at full length; the dates when presented to the Legislature; the name of the member who moved the same, and whether ordered to be printed or not.**

---

## CONTENTS OF PART I

No. 1 — Public Accounts of the Province for the year ending 31st October, 1922. Presented to the Legislature, February 20th, 1923. *Printed.*

No. 2 — Estimates—Supplementary for the service of the Province for the year ending 31st October, 1923. Presented to the Legislature, February 22nd, 1923. *Printed.* Estimates for the year ending 31st October, 1924. Presented to the Legislature, May 1st, 1923. *Printed.* Supplementary Estimates, grant to Dr. Banting. Presented to the Legislature, May 4th, 1923. *Not Printed.*

## CONTENTS OF PART II

No. 3 — Report of the Minister of Lands and Forests for the year 1922. Presented to the Legislature, May 4th, 1923. *Printed.*

No. 4 — Report of the Department of Mines for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

## CONTENTS OF PART III

No. 5 — Report of the Inspector of Division Courts for the year 1922. Presented to the Legislature, May 7th, 1923. *Printed.*

No. 6 — Report of the Inspector of Legal Offices for the year 1922. Presented to the Legislature, April 9th, 1923. *Printed.*

No. 7 — Report of the Inspector of Registry Offices for the year 1922. Presented to the Legislature, April 9th, 1923. *Printed.*

No. 8 — Report of the Municipal Auditor for the year 1922. Presented to the Legislature, January 24th, 1923. *Printed.*

No. 9 — Report of the Commissioners for the Queen Victoria Niagara Falls Park for the year 1922. Presented to the Legislature, April 30th, 1923. *Printed.*

No. 10 — Report of the Superintendent of Insurance for the year 1922. Presented to the Legislature, May 1st, 1922. *Printed.*

No. 11 — Report of the Registrar of Friendly Societies for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 12 Report of the Registrar of Loan Corporations for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

## CONTENTS OF PART IV

No. 13 Report of the Minister of Public Works for the year 1922. Presented to the Legislature, February 14th, 1923. *Printed.*

No. 14 Report of the Department of Game and Fisheries for the year 1922. Presented to the Legislature, May 2nd, 1923. *Printed.*

No. 15 Report upon Highway Improvement for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 16 Report of the Department of Labour for the year 1922. Presented to the Legislature, May 4th, 1923. *Printed.*

No. 17 Report of the Department of Education for the year 1922. Presented to the Legislature, May 3rd, 1923. *Printed.*

No. 18 Report of the Board of Governors of the University of Toronto for the year ending 30th June, 1922. Presented to the Legislature March 5th, 1923. *Printed.*

No. 19 Report of the Secretary and Registrar of the Province for the year 1922. Presented to the Legislature, March 26th, 1923. *Printed.*

## CONTENTS OF PART V

No. 20 Report of the Registrar-General upon the Births, Marriages and Deaths, in the Province for the year 1922. Presented to the Legislature, May 4th, 1923. *Printed.*

No. 21 Report of the Provincial Board of Health for the year 1922. Presented to the Legislature, April 30th, 1923. *Printed.*

No. 22 Report of the Inspector upon the Hospitals for Insane, Feeble-minded and Epileptic, for the year 1922. Presented to the Legislature, May 4th, 1923. *Printed.*

No. 23 See No. 22.

No. 24 Report of the Ontario Parole Board for the year ending October 31st, 1922. Presented to the Legislature, February 14th, 1923. *Printed.*

No. 25 Report of the Inspector upon Hospitals and Charitable Institutions for the year 1922. Presented to the Legislature, May 4th, 1922. *Printed.*

No. 26 Report of the Inspector upon Prisons and Reformatories. Presented to the Legislature, May 4th, 1923. *Printed.*

No. 27 Report of the Superintendent upon Neglected and Dependent Children for the year 1922. Presented to the Legislature, May 4th, 1922. *Not Printed.*

No. 28 Report of the Board of License Commissioners on the operation of the Ontario Temperance Act for the year 1922. Presented to the Legislature, May 3rd, 1923. *Printed.*

## CONTENTS OF PART VI

No. 29 Report of the Minister of Agriculture for the year ending October 31st, 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 30 Report of the Ontario Agricultural College and Experimental Farm for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 31 Report of the Veterinary College for the year 1922. *Not Presented.*

No. 32 Report of the Agricultural and Experimental Union for the year 1922. Presented to the Legislature, May 4th, 1923. *Printed.*

No. 33 Report of the Stallion Enrolment Board for the year 1922. *Not Presented.*

No. 34 Report of the Vegetable Growers' Association for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 35 Report of the Corn Growers' Association for the year 1922. *Not Presented.*

No. 36 Report of the Entomological Society for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 37 Report of the Beekeepers' Association for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 38 Report of the Dairymen's Association for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 39 Report of the Live Stock Branch of Department of Agriculture for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 40 Report of the Bureau of Municipal Affairs upon Housing for the year 1922. Presented to the Legislature, March 5th, 1923. *Printed.*

No. 41 Report upon Women's Institutes for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 42 Report of the Agricultural Societies and of the Convention of the Association of Fairs and Exhibitions for the year 1922. Presented to the Legislature, April 20th, 1923. *Printed.*

No. 43 Report of the Horticultural Societies for the year 1922. Presented to the Legislature, May 1st, 1922. *Printed.*

No. 44 Report of the Fruit Growers' Association for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

No. 45 Report of the Vineland Experiment Station for the year 1922. *Not Presented.*

No. 46 Report of the Statistics Branch of the Department of Agriculture for the year 1922. Presented to the Legislature, May 1st, 1923. *Printed.*

## CONTENTS OF PART VII

No. 47 Report of the Bureau of Municipal Affairs for the year 1922. Presented to the Legislature, January 24th, 1923. *Printed.*

No. 48 Report of the Temiskaming and Northern Ontario Railway Commission up to October 31st, 1922. Presented to the Legislature, February 7th, 1923. *Printed.*

No. 49 Report of the Hydro-Electric Power Commission for the year 1922. Presented to the Legislature, May 4th, 1923. *Printed.*

No. 50 Report of the Ontario Railway and Municipal Board for the year 1922. Presented to the Legislature, April 30th, 1923. *Printed.*

## CONTENTS OF PART VIII

No. 51 Return from the Records of the By-elections to the Legislative Assembly held on 23rd October, 1922. Presented to the Legislature, March 1st, 1923. *Printed.*

No. 52 Report of the Bureau of Archives for the year 1922. Presented to the Legislature, May 1st, 1923. *Not Printed.*

No. 53 Report of the Librarian of the Legislative Assembly for the year 1922. Presented to the Legislature, February 9th, 1923. *Not Printed.*

No. 54 Auditors' Report 1921-22, pursuant to provision of Order-in-Council dated October 28th, 1909. Presented to the Legislature, February 26th, 1923. *Printed.*

No. 55 Report of Workmen's Compensation Board for the year 1922. Presented to the Legislature, May 4th, 1922. *Printed.*

No. 56 Report of the Commission to conduct inquiry into the truth or falsity of certain charges, etc., reflecting on the Administration of the Attorney-General's Department in respect of the investigation into the death of Captain Orville Huston, at Fort Frances, December 16th, 1921, etc., etc., etc. Presented to the Legislature, January 25th, 1923. *Not Printed.*

No. 57 Report on Osgoode Hall of the Commission to Inquire, Consider and Report upon the best mode of selecting, appointing and remunerating Sheriffs, etc., etc., etc. Presented to the Legislature, January 24th, 1923. *Not Printed.*

No. 58 Copy of agreement and contract with the United Press, Limited, in connection with printing for the Legislative Assembly. Presented to the Legislature, February 7th, 1923. *Printed.*

No. 59 Copy of agreement and contract with the United Press, Limited, in connection with binding for the Legislative Assembly. Presented to the Legislature, February 7th, 1923. *Printed.*

No. 60 Report of Commissioner under The Extramural Employment of Sentenced Persons Act, 1921, for the year ending October 31st, 1922. Presented to the Legislature, January 24th, 1923. *Printed.*

No. 61 Final Report of the Representative of the Province of Ontario, respecting the Lake Disaster Fund of Canada. Presented to the Legislature, January 24th, 1923. *Not Printed.*

No. 62 Return to an Order of the House, dated 9th February, 1923, That there be laid before this House, a Return of all correspondence between any Minister of the Government, the Civil Service Commissioner or any Officer of the Government and any other person or persons regarding the appointment of Allan MacDonald, formerly Assistant Crown Timber Agent at Fort Frances, in the Rainy River District. Presented to the Legislature, March 5th, 1923. Mr. McCrea. *Not Printed.*

No. 63 Report of Commission to investigate and report upon the accuracy or otherwise of all returns made pursuant to the Crown Timber Act, etc., etc., etc. Presented to the Legislature, January 24th, 1923. *Not Printed.*

No. 64 Return to an Order of the House of June 8th, 1922, That there be laid before this House, a Return of copies of all papers, documents, correspondence, cablegrams, reports and memoranda between any person or persons, companies or corporations, and any member of the Government in reference to the re-purchase or refunding of the loan or loans in connection with which A. H. Pepall was sent to England by the Government in 1920. Presented to the Legislature, January 24th, 1923. Mr. Ferguson. *Not Printed.*

No. 65 Return to an Order of the House of the 6th June, 1922, That there be laid before the House, a Return of copies of all documents, agreements, memoranda, correspondence and papers relating to the Rockfeller Foundation Gift to Toronto University, between the Minister of Education or any other Minister of the Government, or the President, or any other of the University

authorities, and any person or persons whomsoever, with reference to the said gift. Presented to the Legislature, January 24th, 1923. Mr. Marshall. *Not Printed.*

No. 66 Regulations and Orders-in-Council passed since the last Session of the Legislature under the authority of The Department of Education Act or of the Acts respecting Public Schools, Separate Schools or High Schools. Presented to the Legislature, January 25th; February 7th; February 23rd; March 7th; April 6th and May 4th, 1923. *Not Printed.*

No. 67 Return to an Order of the House, dated 16th February, 1923, That there be laid before this House, a Return of copies of all letters, telegrams, papers and documents, evidence and reports in connection with the alleged accident of W. W. Calhoun of Sault Ste. Marie, together with the reports, recommendations, findings, rulings and decision of the Workmen's Compensation Board or any officials under their control or in their employ, and the same be laid upon the table of the House. Presented to the Legislature, March 19th, 1923. Mr. Dewart. *Not Printed.*

No. 68 Return to an Order of the House of the 10th March, 1922, That there be laid before the House, a Return of all correspondence, telegrams or communications between the Attorney-General, the Prime Minister or any member of the Government, N. W. Rowell or R. T. Harding, representing the Attorney-General, and E. W. Backus or any official of the International Lumber Company of Minnesota in connection with the action against the Shevlin-Clarke Company, relative to Berths 45, 49 and 51. Presented to the Legislature, January 26th, 1923. Mr. Ferguson. *Not Printed.*

No. 69 Report of the Agricultural Development Board for the year ending October 31st, 1922. Presented to the Legislature, January 26th, 1923. *Not Printed.*

No. 70 Supplementary Return to an Order of the House of the 25th May, 1922, That there be laid before this House, a Return of the Legislative grants for the year 1922 paid to the Rural, Public and Separate Schools, in the Counties and Districts and to the Urban, Public and Separate Schools in the Counties and Districts which, in accordance with the Provisions of the Amendment to the Schools Act, passed in 1922, were classed as Rural Schools, and received grants as such. Presented to the Legislature, February 1st, 1923. Mr. Cooke. *Not Printed.*

No. 71 Return to an Order of the House, dated 31st January, 1923, That there be laid before this House, a Return showing copies of all correspondence between George Bell, K.C., and the Honourable the Attorney-General in reference to the moving of the Ontario Government Dispensaries to premises adjoining the property of St. Andrew's Church, in the City of Toronto. Presented to the House, February 5th, 1923. Mr. Dewart. *Not Printed.*

No. 72 — Report relative to the situation in the Thunder Bay District of Commission to inquire into and report on estimates submitted from time to time to the Hydro-Electric Power Commission of Ontario for the Queenston-Chippawa Power Development and also all estimates for the said work submitted by the said Commission to the Government of Ontario, etc., etc., etc. Presented to the Legislature, February 7th, 1923. *Not Printed.*

No. 73 — Return to an Order of the House of the 26th April, 1922, That there be laid before the House a Return showing: (*a*) the total amount received by the Honourable the Provincial Treasurer or his Department, or any department or sub-department of the Government, during the months of August, September and October during each of the years 1919, 1920 and 1921, under the heading of Ordinary Revenue in regard to items mentioned. Presented to the Legislature, February 7th, 1923. Mr. Sinclair. *Not Printed.*

No. 74 — Statement showing all sums credited to the Highway Improvement Fund and all payments chargeable thereto for the fiscal year ending 31st October, 1922. Presented to the Legislature, February 8th, 1923. *Not Printed.*

No. 75 — Reports of Clarkson, Gordon and Dilworth upon the accounts of the Hydro-Electric Power Commission of Ontario for the year ending 31st October, 1920 and 1921. Presented to the Legislature, April 13th, 1923. *Printed.*

No. 76 — Statement and Report of the Ontario Athletic Commission and of the Auditor thereof, for the year ending October 31st, 1922. Presented to the Legislature, February 23rd, 1923. *Not Printed.*

No. 77 — Return to an Order of the House of the 7th February, 1923, for a Return of copies of all letters, telegrams, and all other evidence of investigation in connection with the alleged accident to one Mansford H. Clement, deceased, formerly of Orillia, Ont., and that a copy of the discussion of the Workmen's Compensation Board on same be also returned and laid on the table of the Legislature for inspection by the House. Presented to the Legislature, February 26th, 1923. Mr. Johnston (Simcoe). *Not Printed.*

No. 78 — Report of the Board of Visitors, respecting the Homewood Sanatorium, Guelph. Presented to the Legislature, February 26th, 1923. *Not Printed.*

No. 79 — Report on the Central Ontario System of the Commission to enquire into and report upon (1) all estimates submitted from time to time for the Queenston-Chippawa Power Development, etc., etc., etc. Presented to the Legislature, March 5th, 1923. *Not Printed.*

No. 80 Return to an Order of the House, dated 9th of February, 1923, That there be laid before this House, a Return showing the names of members of the permanent staff of the Hydro-Electric Commission of Ontario, who have been granted an increase in salary since January 1st, 1923, also showing the amount of increase in each case. Presented to the Legislature, March 21st, 1923. Mr. McLeod. *Not Printed.*

No. 81 Return to an Order of the House, dated 12th of March, 1923, That there be laid before this House, a Return (*a*) of all evidence and proceedings, including all exhibits and documents, as taken in the Northern Ontario Fire Investigation before the Fire Marshal of Ontario. (*b*) Copies of all correspondence carried on by the Fire Marshal of Ontario, counsel employed in investigation, and officials of Fire Marshal's Department with all persons, including the Government and the members of the Fire Relief Committee. (*c*) Copies of all correspondence carried on by the Premier, or any member of his Government, or his Department, relating to the said fire, and regarding the appointment of a Fire Relief Committee, including the appointment of said Committee. Presented to the Legislature, March 21st, 1923. Mr. Ferguson. *Not Printed.*

No. 82 Return to an Order of the House, dated 14th of March, 1923, That there be laid before this House, a Return showing in detail the estates from which succession duties came in 1921 and 1922, similar to the particulars published theretofore in the Public Accounts, and that hereafter such particulars be published yearly in the Public Accounts as has been customary. Presented to the Legislature, March 21st, 1923. Mr. J. W. Curry. *Not Printed.*

No. 83 Return to an Order of the House dated 14th March, 1923, That there be laid before this House, a Return of a copy of the report made by Harbinger & Allen, chartered accountants, of their investigation into the Department of Lands and Forests, and same to be laid upon the Table of the House. Presented to the Legislature, March 27th, 1923. Mr. Marceau. *Not Printed.*

No. 84 Report of the Ontario Provincial Police for the year 1922. Presented to the Legislature, April 6th, 1923. *Printed.*

No. 85 Return to an Order of the House dated 16th March, 1923, That there be laid before this House, a Return of copies of all estimates, cruises, explorations, maps and reports of every description in connection with the area north of Cochrane, received by the Government prior to and since the commencement of construction work on the T. & N. O. Railway. Presented to the Legislature, April 6th, 1923. Mr. MacBride. *Not Printed.*

No. 86 Return to an Order of the House dated 14th March, 1923, That there be laid before this House, a Return of dates of meetings held by the Board of Governors, Toronto University, since 1915, with the names of those attending such meetings. Presented to the Legislature, April 6th, 1923. Mr. Watson. *Not Printed.*

No. 87 Return to an Order of the House dated 16th March, 1923, That there be laid before this House, a Return of all applications for licenses to spear or net fish in Hamilton Bay for the years 1920, 1921, 1922. 2. List of names of those who secured licenses to spear or net fish in Hamilton Bay for the years 1920, 1921 and 1922. 3. List of names of those who applied for, and the names of those who secured special permission or licenses to spear or net fish in the spring in Hamilton Bay, during each of the above mentioned years, and the authority under which such special permission was given. Presented to the Legislature, April 6th, 1923. Mr. Halcrow. *Not Printed.*

No. 88 Report of the Public Service Superannuation Board for the year 1922. Presented to the Legislature, April 9th, 1923. *Printed.*

No. 89 Report of the Minimum Wage Board for the year 1922. Presented to the Legislature, April 12th, 1923. *Printed.*

No. 90 Report on Sandwich, Windsor and Amherstburg Railway and Windsor and Tecumseh Electric Railway of the Commission to enquire into and report upon: 1. All estimates submitted from time to time to the Hydro-Electric Power Commission of Ontario for the Queenston-Chippawa power development, and also all estimates for the said work submitted by the said Commission to the Government of Ontario. 2. The reason for increases from time to time in the estimates for the Queenston-Chippawa power development, etc. Presented to the Legislature, April 16th, 1923. *Not Printed.*

No. 91 Report of the Civil Service Commissioner of Ontario for the year ending 31st October, 1922. Presented to the Legislature, April 26th, 1923. *Printed.*

No. 92 Return to an Order of the House of the Nineteenth day of April, for a Return of copies of all letters, telegrams, papers, documents and reports in connection with the accident of James F. Devine, Cochrane, Ontario, together with reports, recommendations, findings, rulings, and decisions of the Workmen's Compensation Board or any officials under their control or in their employ and the same be laid upon the table of the House. Presented to the Legislature, April 20th, 1923. Mr. Marceau. *Not Printed.*

No. 93 Return to an Order of the House of the Nineteenth day of April, for a Return of all letters, telegrams, papers, documents, and reports in connection with an accident to Eugene Seguin, North Bay, working with his father for Michael Dweyer, who is a sub-con-

tractor of Mr. Satchell, contractor for the Spanish River Pulp and Paper Company, together with reports, recommendations, findings, rulings, and decisions of the Workmen's Compensation Board, or any officials under their control or in their employ. Presented to the Legislature, April 20th, 1923. Mr. Marceau. *Not Printed.*

No. 94 Return to an Order of the House of the Nineteenth day of April, for a Return of (1) all copies of documents, papers, letters and correspondence in connection with the proposal of the Government that Spadina House should be used as the offices for the Workmen's Compensation Board; (2) of all documents, papers, letters, correspondence and minutes concerning the refusal of the Chairman of the Workmen's Compensation Board or the Board to have the staff under the Workmen's Compensation Board placed under the Civil Service Act; (3) of a report setting out the number of pay roll auditors in 1915 and 1916, and of the number of contributing firms in each of these years respectively; and also of the number of auditors in 1922 and the number of firms contributing in that year. Presented to the Legislature, April 20th, 1923. Mr. Dewart. *Not Printed.*

No. 95 Return to an Order of the House of the Nineteenth day of April, for a Return showing all the different tables used by the Workmen's Compensation Board for computing Pension Reserves, with the dates during which each table was in force and copy of the minute or resolution adopting new tables at any time with the date of such minute. Presented to the Legislature, April 20th, 1923. Mr. Dewart. *Not Printed.*

No. 96 Return to an Order of the House of the Nineteenth day of April, for a Return showing copies of all correspondence, telegrams, reports of investigation relating to the claim 264,504, made to the Workmen's Compensation Board for injuries received by C. J. Halliday whilst employed as foreman carpenter by W. J. Fletcher, as well as all correspondence, reports, etc., dealing with the subsequent demand by the said Board for fees from the said Halliday as an employer of labour. Presented to the Legislature, April 20th, 1923. Mr. Tolmie. *Not Printed.*

No. 97 Return to an Order of the House, showing copies of all correspondence, telegrams, reports or recommendations relating to the removal from office of Fortunat Cadieux, Bailiff of the First Divisional Court, County of Prescott (county town of L'Orignal), and the appointment of Albert Rochau in his place. Presented to the Legislature, April 20th, 1923. Mr. Evanturel. *Not Printed.*

No. 98 Report of Mothers' Allowances Commission for the year 1922. Presented to the Legislature, April 30th, 1923. *Printed.*

No. 99 Return to an Order of April 19th, 1923, for a Return of copies of all correspondence, reports, documents and papers between the Workmen's Compensation Board and the Public Works Department, or any other Department of the Government or persons, and between any Department of the Government and the Workmen's Compensation Board or any person or persons, in connection with the death of Harry S. Scott, and payment of any moneys to the widow of the said Harry S. Scott of Orillia, and any ruling of the Treasury Department. Presented to the Legislature, April 30th, 1923. Mr. John A. Currie. *Not Printed.*

No. 100 Statement on distribution of Statutes. Presented to the Legislature, May 1st, 1923. *Not Printed.*

No. 101 Return to an Order of the House of 16th March, 1923, That there be laid before this House, a Return of all applications, recommendations, letters, telegrams, papers and other correspondence having reference to the appointment to positions in the Algonquin Park, of the following:—E. C. Brewer, G. A. Holmberg, F. Lovesey, M. Newell, C. Ryan, T. Saraza, D. Stringer, A. Grant, W. A. Mooney, J. P. Foran, P. J. Gervais. Presented to the Legislature, May 2nd, 1923. Mr. Marceau. *Not Printed.*

No. 102 Return to an Order of the House of the 14th March, 1923, for a Return of copies of all letters, telegrams, recommendations and other correspondence having reference to the appointment of Mark Robinson as temporary park superintendent of Algonquin Park, and to the proposed appointment of the same person as permanent superintendent of Algonquin Park. Presented to the Legislature, May 3rd, 1923. Mr. Marceau. *Not Printed.*

No. 103 Report of the Soldiers' Aid Commission for the year ending 31st October, 1923. Presented to the Legislature, May 4th, 1923. *Not Printed.*

# Ontario Department of Agriculture

# REPORT

OF THE

# Minister of Agriculture

## Province of Ontario

FOR THE YEAR ENDING OCTOBER 31, 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

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# REPORT

OF THE

# Minister of Agriculture for Ontario

1922.

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*To His Honour* Colonel Henry Cockshutt,
*Lieutenant-Governor of the Province of Ontario.*

May It Please Your Honour,

I have the honour to submit the Annual Report of this Department for the fiscal year ending October 31st, 1922.

Under the respective branches, the work of the Department for the year just closed is set forth and reviewed. This record will show a large range of activity and a healthy development. In addition, however, I would like to refer to a few matters of general interest.

## Co-operative Marketing.

It is gratifying to record the fact that the crop situation has shown a decided improvement in the past year as compared to its immediate predecessors. This is especially true so far as yields are concerned. It is still a regrettable fact, however, that the returns are not adequate. It is usual to judge values by pre-war standards and on this basis it is obvious that the return received by the farmer for what he produces is not at all proportionate to what he is required to pay for what he has to buy. In other words, the decrease from high levels in the matter of farm prices has been much greater than in other commodities and, as a consequence, the farmer's dollar will not purchase more than perhaps 70% of what it would before the war.

While general economic conditions have an important bearing on this situation, I feel that the most important step which the farmers must take in their own behalf is an improvement in the machinery by which their produce is marketed. For this reason I have devoted a good deal of time to studying this phase of the farmers' problems, which I believe to be the most important phase at the present time, and I have also spent a good deal of time during the past year in discussing the matter with farmers in public meetings in various parts of the Province. The consideration which I have been able to give to this matter has led me to the conclusion that the most progress can be made by adopting co-operative organization on a commodity basis for the marketing of the main products of the farm. There are only two or three simple general principles involved in the proposition. In the first place, it is maintained that from 50% to 75% of the producers of a certain commodity should sign contracts to market the commodity through one central organization for a term of three to five years. In this way the producers retain control of the marketing of their product and the fact that such a large proportion of the

product is being handled through one organization touches two vital points in the problem. It permits of the very best and wisest distribution and, by providing a large volume of business, it enables the producers to employ the very best brains in the business to work in their own behalf.

Organizations of producers formed along these lines have been operated with great success for many years in Denmark and in California and similar organizations have been formed on a large scale in the Southern and Western States during the past few years. Great interest has been shown by producers in this Province with particular reference to cheese, honey and beans. At the last Session of the Legislature, a Bill was passed incorporating the Ontario Co-Operative Dairy Products, Limited, as an organization to market the cheese and butter of the Province. As there are 75,000 producers of milk delivering at cheese factories, it is a large problem to reach all and submit fully a plan which involves some departure from established usage. A very substantial start has been made, however, and I feel that it will be productive of excellent results in the future.

In all this work I have emphasized the fact that the movement must be a producers' movement and this Department can only assist in disseminating the information necessary to a clear understanding of the proposition. In the educational work thus carried on, I have been fortunate in having the assistance of Mr. Aaron Sapiro, who has had experience as organizer and Counsel for a great many of the largest commodity co-operative organizations in California and other parts of the United States. In addition to having had a most valuable experience, he is a man of exceptional intellect, personal charm and rare platform talents and his addresses in various parts of rural Ontario have had a most stimulating influence. The problem is too big to be worked out in one year but I believe consideration has been directed along sound and business-like lines and I believe the future years will witness very important developments of this nature.

## Removal of Cattle Embargo.

As having an important bearing on the extension of markets so necessary for the full development of agriculture in this Province, I would like to refer to the fact that the past year has witnessed decisive action toward the removal of the embargo which has prohibited the shipment of store cattle to the British Isles for over thirty years. By a substantial vote of 247 to 171, the British House of Commons, on July 24, 1922, decided in favour of the removal of the embargo and the new British House of Commons, assembling immediately after the election, ratified this decision by passing the necessary legislation which is to become effective on April 1st. This action will have an important bearing on the development of the live stock industry in this Province. It culminates many years of agitation, the last two years of which are of special interest.

In the fall of 1920, after assuming the duties of this position, I found it necessary to go to Great Britain in connection with the immigration work which is under this Department. Having taken a keen interest for many years in the question of the embargo, I decided to devote some inquiry as to the situation in regard to removal as it existed at that time. I found that there was very little attention being paid to the subject. At the Imperial Conference of 1917, the subject had been a very live issue. In response to the strong representations of the Canadian representatives, a pledge was given on behalf of the British Government that the embargo would be removed and that this removal

should become effective at the conclusion of the war. When the war terminated, however, no action was taken by the British authorities. In a few months attention was called to the matter of the pledge, but the British Minister of Agriculture announced that conditions had changed and that the Government would not be justified in removing the embargo. This was followed by other announcements at different intervals of a few months so that by the autumn of 1920 the determination of the British Government to maintain an embargo had been made clear and emphatic and their decision was accepted as unalterable. Hence, I found that no person was taking any particular interest in the subject and there were no further steps being taken to secure a reversal of policy on the part of the British Government. It had long been my feeling that, if the embargo was to be removed, it would be removed, not by formal official representations but by the force of British public opinion. I, therefore, discussed this matter from this angle with leading men in British public life. I found that the Government was quite ready to remove the embargo if opinion demanded, but the only expression of public opinion which had come to their attention was that in favour of the retention of the embargo. Among others I discussed the matter with Lord Beaverbrook, who, as a former Canadian, was always ready to render any service in his power to Canada. After considerable discussion, he agreed that the facts should be laid fully before the British public and he agreed to lead in this campaign through the newspapers under his control. As Canadian herds had always had a clean bill of health and as the embargo technically existed as a protection against disease, there was a splendid case to present from the Canadian standpoint. Lord Beaverbrook entered into the campaign with customary vigour and the force of the Canadian case soon appealed to citizens in all walks of life. Public opinion expressed itself in various ways.

In March of 1921, two Conferences were held in London and I was honoured with an invitation to address them. Here I endeavoured to present the facts clearly from the Canadian standpoint and these addresses at strictly non-political gatherings were the only two addresses which I delivered in Great Britain on the subject. The campaign, however, continued in many ways and the Government finally appointed a Commission to investigate. This gave an opportunity for Canada to present her unanswerable case and it also gave an opportunity for all those interested on behalf of Canada to bring to bear their voice and influence. Each month showed growing interest and an increasing demand of public opinion until it culminated in the vote of the House of Commons as already mentioned and the removal of the embargo. On the passing of this vote, I received the following cablegram from Lord Beaverbrook:

London, England,
July 25th, 1922.

Hon. Manning Doherty,
Minister of Agriculture,
Toronto, Ontario.

"Resolution to remove cattle embargo passed in Commons by substantial majority. This means that will of people of Britain is proclaimed, and that embargo will go, though opponents may yet procure delays and evasions. Principal credit for this decision lies with yourself who first came to England an organizer of movement and returned again to explain the Canadian standpoint to British public opinion. Your advocacy was greatest instrument in removing this unjust and impolitic bar to sound inter-imperial relations. You have been criticized by opponents of removal of embargo, but attacks are a tribute to efficiency with which you pleaded cause. Public here understands and appreciates your action and that of other eminent Canadian statesmen who urged removal of embargo from British platforms."

BEAVERBROOK.

I desire, however, to record appreciation of the great service which has been rendered to Canada in this matter by Lord Beaverbrook, who took the leadership in Great Britain, and also to the scores, and perhaps hundreds, of others who afterwards added their support so as to make possible the volume and result which has been achieved. It seemed only proper that these facts should be recorded in this place at this time as a matter of record and apart altogether from any controversial interest.

### Developing Immigration Work.

During the war there were many indications that the time was opportune for increasing the immigration activities carried on behalf of the Province. War conditions necessarily restricted immigration and after the war adjustments, with consequent large unemployment in industrial centres, deferred the renewal of really active work. It is a curious fact, however, that no matter how much unemployment there appears to be in industrial centres there is practically always a demand for farm help, with some measure of experience, on farms of this Province. With the rapid increase of employment in the centres of population, there were indications that this scarcity of farm help would become more and more acute. Apart from this aspect of the problem, there are many opportunities in this Province for men with small capital who desire to take up farming on their own account. In addition to these local conditions, a new fact had entered into the immigration situation. For the first time in history the British Government had taken definite official recognition of the fact that the proper distribution of British subjects in the different parts of the Empire was a problem of vital concern to the Home Government as well as to the Governments of the Overseas Dominions. Accordingly, an Empire Settlement Act was passed and provision was made to extend up to $15,000,000 per annum for a period of fifteen years in assisting any Government or organization interested in promoting immigration to outlying parts of the Empire.

Having regard therefore to all these facts and it being desirous that the Province of Ontario should take its part and secure any benefits, I asked the Agent-General for Ontario to come to this Province in order to discuss the matter more fully. Later, a Conference was called at the Parliament Buildings at which representatives of the various organizations interested in the problem were present and the subject was fully discussed, both from the local and Imperial standpoints. The conclusions arrived at by the Conference was embodied in the following resolution:—

"This Conference is of the opinion that the Government of Ontario would be justified in adopting, in co-operation with the Imperial Government and Federal Government, a sane aggressive immigration policy with the object of increasing settlement in rural Ontario and developing the natural resources of the Province; and this Conference is of the opinion that in developing such policy careful consideration should be given to the following features:

"The bringing out, training and placing of British boys from fourteen to sixteen years of age.

"The bringing out and placing of experienced farmers with families by making provision for living accommodation on lines acceptable to the immigrant and the farmer.

"The encouragement of farmers with capital and the extension of loans now available to farmers of three years' residence in the Province. The continuation of immigration of domestic servants and farm labour with such assistance for transportation and reception and supervision as may be found practical."

Since that time the Department has been negotiating through the Agent-General in Great Britain for agreements with the Overseas Settlement Com-

mittee covering these points. The general proposition of the Overseas Settlement Committee is co-operation on an equal basis with any Provincial or Dominion Government, each side contributing 50 per cent of the cost or advances. Negotiations are still being carried on to complete agreements covering these points and there is every indication of an increased flow of immigrants to this Province which should be most beneficial to the Province as well as to the Empire as a whole.

## Federal Grant Agreement.

As in previous years, I beg to record the Agreement entered into with the Federal Minister of Agriculture for the expenditures of monies allotted to this Province under The Agricultural Instruction Act. The apportionment of these monies was as follows:—

### Agricultural Colleges and Schools.

| | | |
|---|---|---|
| 1. Ontario Agricultural College—salaries and expenses, additions to staff, maintenance | | $ 8,000.00 |
| 2. Agricultural School and Farm: | | |
| (a) Capital expenditure | $89,000.00 | |
| (d) Administrative and teaching staff, maintenance, purchase of stock, machinery, repairs, services, expenses and equipment | 35,000.00 | |
| | | 124,000.00 |

### Instruction and Demonstration.

| | |
|---|---|
| 3. Agricultural representatives | 139,603.26 |
| 4. Extension work in Household Science in rural communities | 1,200.00 |
| 5. Co-operation and markets, investigation of marketing conditions for Ontario crops, educational work in connection with the marketing of farm products, including organization of co-operative societies | 4,000.00 |
| 6. Demonstrations in connection with vegetable growing | 3,500.00 |
| 7. Women's Institute work, including courses in cooking, sewing, etc | 2,800.00 |
| 8. Lectures on horticulture | 1,000.00 |
| 9. Demonstration work on soils | 7,200.00 |
| 10. Beekeeping | 1,000.00 |
| 11. Drainage work | 4,000.00 |

### Elementary Agricultural Education.

| | |
|---|---|
| 12. To provide for and to encourage the teaching of agriculture, manual training as applied to work on the farm, and domestic science in high, public, separate and continuation schools, and in universities, to be available for grants, services, expenses, and equipment, and travelling and living expenses of teachers, inspectors and others in attendance at short courses or other educational gatherings, and to be paid out on the recommendation of the Department of Education | 40,000.00 |
| | $336,303.26 |

It may be noted that the current year is the last of the ten years provided for by legislation adopted by the Federal Parliament in 1913. This, therefore, would be the last grant unless action is taken by the Federal Government to provide for a renewal. Having this fact in mind I have taken frequent opportunity to urge upon the Federal Ministers and officials interested in the matter the importance of renewing this substantial assistance to agricultural educational work. I am glad to say that all the assurances I have received have been favourable but no action will be taken until the next meeting of the Federal Parliament. There can be no doubt but that these monies have given a real stimulus to agricultural instruction work in this Province and I presume it has been the same in the other Provinces of Canada which naturally participated equably in the allotment.

I now direct attention to the specific lines of work which have been carried out under the different branches under which the Department is organized.

All of which is respectfully submitted.

MANNING W. DOHERTY,
*Minister of Agriculture.*

Toronto, March, 1923.

# ONTARIO AGRICULTURAL COLLEGE

The following are the figures in each course held throughout the year.

Figures for general course include students in attendance during the winter term of 1922, and the new students of the fall term.

| | | |
|---|---|---|
| General Course | 556 | |
| Specialists in General Course Work | 9 | |
| Dairy Courses | 182 | |
| Stock and Seed Judging | 101 | |
| Poultry Raising | 42 | |
| Horticulture Courses | 82 | |
| Apiculture | 95 | |
| Drainage and Drainage Surveying | 5 | |
| Farm Power | 81 | |
| | | 1,153 |
| Domestic Science (at Macdonald Institute) | | 396 |
| Summer Courses—High School—1st year, 27; 2nd year, 33 | 60 | |
| Public School Teachers—1st year | 232 | |
| Public School Teachers—2nd year | 178 | |
| School for Rural Leadership | 93 | |
| | | 563 |
| Total | | 2,112 |

## ANALYSIS OF COLLEGE ROLL (GENERAL COURSE), 1922

*From Ontario.*

| | | | | | |
|---|---|---|---|---|---|
| Algoma | 3 | Huron | 6 | Perth | 11 |
| Brant | 11 | Kent | 4 | Peterborough | 3 |
| Bruce | 10 | Lambton | 12 | Prescott | 3 |
| Carleton | 45 | Lanark | 8 | Prince Edward | 1 |
| Dufferin | 3 | Leeds | 5 | Rainy River | 1 |
| Dundas | 5 | Lennox & Addington | 2 | Renfrew | 1 |
| Durham | 5 | Lincoln | 21 | Russell | 5 |
| Elgin | 8 | Middlesex | 23 | Simcoe | 16 |
| Essex | 7 | Muskoka | 7 | Thunder Bay | 6 |
| Frontenac | 7 | Nipissing | 4 | Temiskaming | 2 |
| Glengarry | 4 | Norfolk | 6 | Victoria | 2 |
| Grenville | 5 | Northumberland | 3 | Waterloo | 11 |
| Grey | 9 | Ontario | 10 | Welland | 1 |
| Haldimand | 9 | Oxford | 18 | Wellington | 49 |
| Halton | 10 | Parry Sound | 2 | Wentworth | 13 |
| Hastings | 3 | Peel | 9 | York | 59 |

Total from Ontario ..... 469

*From Other Provinces of the Dominion.*

| | | | | | |
|---|---|---|---|---|---|
| Alberta | 6 | Nova Scotia | 16 | Saskatchewan | 7 |
| British Columbia | 19 | Prince Edward Island | 2 | | |
| New Brunswick | 8 | Quebec | 1 | Total from other Provinces | 59 |

*From Other Countries.*

| | | | | | |
|---|---|---|---|---|---|
| B.W.I. | 2 | England | 14 | U.S. of Columbia | 1 |
| Ireland | 2 | South Africa | 1 | | |
| Japan | 1 | Switzerland | 1 | Total from other countries | 28 |
| New Zealand | 1 | U.S.A. | 5 | | |

*Ages and Religious Denominations.*

The limits of age in the General Course, 1922, ranged from 18 to 41 years. The average age was 22.

| | | |
|---|---|---|
| Anglican.....117 | Friends..... 4 | Presbyterian.....185 |
| Baptist..... 31 | Lutheran..... 4 | Roman Catholic..... 17 |
| Congregational..... 11 | Mennonite..... 1 | Unitarian..... 2 |
| Disciple..... 7 | Methodist.....176 | |
| Evangelical..... 1 | | Total.....556 |

## New Buildings and Alterations.

The new dairy building, a handsome structure of tapestry brick with stone trimmings, was opened for class room instruction and practical work during the year. This building provides in floor space and in mechanical equipment for the instruction in all branches of dairy manufacture, as well as research and experiment. The old dairy building is now occupied by the Department of Rural Economics. Some valuable improvements have been made in the residences and the dining-hall. Two years ago the kitchen and the dining-room in Macdonald Hall were closed and all the students, men and women, are now boarded in the large dining-hall. The parts of Macdonald Hall formerly used as kitchen, pantries and store-room, have been made into a dormitory. There is now accommodation in Macdonald Hall for nearly one hundred and sixty residents. A cafeteria and lunch-room has been opened on the ground floor of the main dining hall, with a seating capacity of one hundred and fifty.

## ANIMAL HUSBANDRY AND FARM DEPARTMENT.

The 1922 crop on the College farm was the best all round yield produced in many years. A favourable season coupled with extra cultivation caused the fertile fields to bring forth an abundant harvest. The spring crop was well put in and the yields of both straw and grain above the average for the farm, mixed grain producing 65 bushels per acre. All told there were 35 acres of mixed grain, 30 acres of barley and 75 acres of oats.

The hay crop was very heavy and was cured in the best of weather, 127 acres yielding nearly 300 loads of fodder of the best quality.

The corn and root crops were well up to average. Forty-seven acres of corn filled the five large silos and 12 acres of mangels with 8 acres of turnips more than filled the root cellars. Roots did exceptionally well, yielding approximately 7,650 bushels of mangels and 4,360 bushels of turnips.

The problem of summer pasture was still acute. Twenty acres of annual pasture (oats and clover) and 16 acres of sweet clover helped out the 35 acres of permanent pasture until the aftermath of the hay fields came on. Eight acres of peas and oats were sown for green feed and most of this was used as a soiling crop with pronounced success.

Five acres of sweet clover were cut with the binder and ensiled. The crop averaged 4 feet high when cut in the late bud stage, June 15. It produced 35 tons 400 lbs. of green feed and when settled in the 12 foot silo produced 12 feet of solid silage. This is being fed out on test against corn. It gave considerable trouble in ensiling, requiring more speed in the blower to properly elevate it.

Ten acres of alfalfa gave two good cuttings yielding all told about 25 tons of excellent feed. This was the first year for this crop and it produced a satisfactory late fall growth and has gone into the winter in good condition.

The farm work was well in hand when the winter set in. All the plowing was done and nearly all the plowed land was cultivated several times and some of it ridged. The stiff-tooth cultivator behind the tractor has improved the tilth considerably. The problem on the farm is to handle the large stock on the small acreage. More straw and pasture than the farm will produce are needed.

Farm Horses.—The only addition to the horse stock during the year was a work team of Clydesdale geldings three and four years old purchased at $425 for the pair. Five colts, two Percherons and three Clydesdales were foaled during the year and four were raised. Investigation on the cost of maintenance of farm work horses during the winter is well under way and results should be available next year. The horse stock on the farm is not equal in quality to the other stock maintained.

Beef Cattle.—The beef cattle herds have been maintained in first-class breeding condition throughout the year. The Shorthorn and Aberdeen Angus herds are strong and new heads for each of these herds were purchased during the year. It is generally conceded that Browndale Banner, the Shorthorn herd sire and Elm Park Elford, the Aberdeen herd sire, are two outstanding bulls of their respective breeds. A new Hereford sire is now required.

The Department was never stronger in beef stock for class room purposes. A number of very high class finished steers and breeding heifers were on hand throughout the year.

The steer feeding experiment to run over two years was put under way and the five calves by a scrub bull and the five by a pure bred bull sent to the Royal Agricultural Winter Fair as a demonstration of the value of breeding in beef production.

During the year considerable investigational work was carried on including the cost of maintenance of beef cattle, and the cost of maintenance of breeding bulls as well as the value of breeding in beef production. It was found that the average cost of feeding breeding beef cows in the College herd was 15.9 cents per day. The cost of labour per cow per day was 7 cents. The value of the manure per cow per day was 5.8 cents and the cost of bedding per cow per day was 1.9 cents. The average weight of calves dropped was 77.33 lbs. and the average gains of these calves were 2 lbs. per day.

In the cost of maintenance of herd bulls it was found that for the Shorthorn bull $129.60 per year was required; for the Hereford $101.76; for the Angus $107.88; for the Ayrshire $107.88, and for the Jersey $86.28.

Dairy Cattle.—The dairy herd went through the year in good general condition. A new Ayrshire bull and a new Jersey sire were added to the herd during the year and also one Ayrshire heifer. The mature cows in the Holstein herd again made an average of 15,000 lbs. of milk each, a few of them going over 18,000 lbs. on twice a day milking.

Some work was done to show the comparative economy of milk production and butter fat production with the different breeds. It was found that the Holsteins produced milk at 23 cents less per hundred weight than did the Ayrshire but in producing a pound of butter fat there was only .03 cents difference. It was found that there was very little difference in the cost of production of the Ayrshires and Holsteins and that on milk production it cost more with Jerseys but they produced butter fat a little cheaper than did the other two breeds.

Some work was also done in an attempt to discover a satisfactory method of handling veal calves from dairy cows. The results show that dairy calves for veal should be marketed at the earliest possible age that the market will accept them. This has the double advantage of making use of the whole milk for that period immediately following parturition and of saving milk for sale at an early date. It was also found that to make satisfactory veal whole milk was necessary.

Work was also carried on to ascertain the cost of maintenance of dry cows and heifers in which it was found a monthly cost per animal of $8.60 was the average.

SHEEP.—The sheep flocks at the College came through the winter in good condition and the lamb crop was satisfactory. We still had trouble with ewes at lambing and this will be difficult to avoid because of lack of facilities to exercise and because of the amount of handling the pregnant ewes get in judging work. Only two flocks are kept for breeding purposes, namely Shropshires and Leicesters. Besides these, classes for judging work in Cotswolds, Lincolns, Hampshires, Oxfords, Dorsets, Southdowns and fat wethers are maintained.

Investigational work on the cost of maintenance of the farm flock was carried out through the year. It cost $4.49 each to winter ewe lambs and $5.50 each to winter breeding ewes.

Investigational work in fattening lambs was continued, and the results showed for last year that it would have paid better to market the lambs in the fall than to finish them in the pens, the lambs all showing a loss when strict account of feed was kept.

SWINE.—The herds of swine have gradually improved from year to year and we feel that we have now choice herds of Yorkshires, Berkshires and Tamworths and for class room purposes we maintain classes of Durocs, Polands and Chesters. The swine branch of the Departmental work shows a distinct profit each year.

Experimental work undertaken during the year covered the following topics: "The Variation in Fecundity of Swine Types and Breeds"; "Investigations on the Salt Requirements of Swine"; "The Cost of Winter Maintenance of Brood Sows under Different Conditions of Feeding"; "Investigations on the Cost of Producing and Marketing of Hogs"; and "Comparative Values of Commercial and Home Grown Hog Feeds."

Space does not permit going into detail regarding this investigational work. From a total of 800 litters of each of the breeds of swine, the average size of litters was established as follows: Yorkshires, 10.2; Tamworth, 9.4; Chester White, 9.3; Duroc Jersey, 8.4; Berkshire, 8.3; Hampshire, 8.2; and Poland China, 8.

In the salt investigational work, the year's experiment showed the optimum requirement to be .5 ounce daily per 125 lbs. of pork, and that two ounces or more of salt per day at this weight is positively injurious.

In the wintering of brood sows it was found that where an narrow nutritive ratio produced largely from concentrated feeds was used, the cost was fifteen cents per day for mature sows, whereas with groups using more roughage, the cost was reduced to eight and nine cents per day.

An extensive experiment with commercial hog feeds versus home-grown feeds showed that under average farm conditions none of the commercial hog feeds used was as economical as a well-balanced mixture produced on the farm.

### Sale of Live Stock.

The annual sale of live stock was held in the pavilion, Thursday, October 26th, and was one of the most successful sales yet held. A record was made in the sale of swine, 98 pigs bringing $4,105.00. The following is a summary of the sale:—

| | | |
|---|---|---|
| 5 | Shorthorns sold for | $1,655 00 |
| 2 | Aberdeen Angus sold for | 260 00 |
| 1 | Hereford sold for | 110 00 |
| 3 | Fat cattle sold for | 289 85 |
| 9 | Holsteins sold for | 1,015 00 |
| 1 | Ayrshires sold for | 100 00 |
| 14 | Leicesters sold for | 247 50 |
| 18 | Shropshires sold for | 307 50 |
| 64 | Yorkshires sold for | 3,047 50 |
| 24 | Berkshires sold for | 690 00 |
| 10 | Tamworths sold for | 367 50 |
| | Total | $8,089 85 |

Buyers were numerous and bidding was brisk, showing that the College stock is appreciated. The total revenue from the live stock and farm department for the year was $18,812.50.

## FIELD HUSBANDRY.

The work in the Department of Field Husbandry may be considered under the following heads: Conducting field experiments at the College, plant-breeding work with farm crops, supervising the co-operative experiments with field crops throughout Ontario, and lecturing to the regular and short course classes.

The past season was exceptionally favourable for the conducting of field experiments. In all, approximately one hundred and twenty different experiments with farm crops were included in the plot tests of 1922. The area occupied by these plots was almost eighty acres and about twenty-five hundred individual plots altogether were sown or planted. Experiments were conducted with grains, roots, potatoes, field corn, hay and pasture crops, and miscellaneous crops. It is most important that farmers not only sow the best seed of the different classes of crops, but that they obtain the very best varieties of these crops. The following varieties have proven their value in Ontario: Winter wheat—O.A.C. No. 104, and Dawson's Golden Chaff; spring wheat—Marquis, and Wild Goose; spring rye—O.A.C. No. 61; winter rye—Petkus, and Rosen; oats—O.A.C. No. 72, Banner, and O.A.C. No. 3; barley—O.A.C. No. 21; emmer—Common; buckwheat—Rye; field peas—Potter, Arthur, and Canadian Beauty; beans—Pearce's Improved Tree; soy beans—O.A.C. No. 211; vetches—Hairy; Dent corn—White Cap Yellow, Golden Glow, Bailey, and Wisconsin No. 7; Flint corn—Longfellow, Salzer's North Dakota, and Gold Nugget; sweet corn—Golden Bantam; sorghum—Early Amber; sunflowers—Black Giant, and Mammoth Russian; mangels—O.A.C. No. 2 strain of Yellow Leviathan; Swede turnips—Good Luck, and Hall's Westbury; millet—Japanese Panicle; pasture rape—Dwarf Essex; Cow Cabbage—Sutton's Earliest Drumhead; Early Potatoes—Irish Cobbler; late potatoes—Green Mountain and Dooley; alfalfa—Grimm, and Ontario variegated; sweet clover—White-blossomed biennial, and yellow-blossomed biennial; grasses—Tall Oat, Orchard, and Meadow or Tall Fescue. Several new varieties of crops from Europe, United States and Canada were included in the tests this year for the first time. Sixteen varieties of soy beans were tested for fodder and grain production in duplicate experiments

during the past year. In the average results of the last five years, the most promising varieties of soy beans were the O.A.C. No. 211, Ito San, Minnesota No. 167, Early Brown and Early Yellow. A press bulletin was published on the subject of "Soy Beans," in the month of August. Biennial white sweet clover, cut at five different stages of maturity, was ensiled in the past summer and autumn. A comparison of the silage value of corn, sunflowers, sweet clover, a mixture of two-thirds corn and one-third sweet clover by weight, was also made. The results of these silage determinations will be printed as soon as the results are finally determined. Fertilizer experiments were conducted with several crops in co-operation with the Department of Chemistry. About three acres of land was used for this work. The Field Husbandry Department supplied the land and co-operated with the Department of Botany in conducting experiments on an area of about one acre for the treatment of grain for smut.

About three acres of the experimental field was devoted to the work of hybridization and plant selection in 1922. The plant-breeding work at Guelph occupies a greater area than that used for similar work by any other institution in North America. The following varieties of crops were originated through this medium and most of them are widely grown in Ontario at the present time: O.A.C. No. 21 barley, O.A.C. No. 72 and O.A.C. No. 3 oats, O.A.C. No. 61 rye, O.A.C. No. 181 field peas, and O.A.C. No. 211 beans. Many other hybrids and selections are in an intermediate stage of development but have not yet been sufficiently tested to determine their utility.

The conducting of co-operative experiments in field husbandry has increased in extent and value in many of the States of the American Union during the past decade. This institution, which was the pioneer in this class of extension work, has now, including the work of the present year, supplied material for co-operative experiments to almost one hundred thousand farmers. Each experimenter receives several lots of seed for experiment under his own particular conditions and this had meant a total distribution of about three hundred thousand packages of seed. The material has been of the very best as the varieties were carefully selected and hand-picked before being distributed.

For demonstration and judging work with both the long and short courses, a special effort has been made, during the present year and for the past several years, to secure the very best material. In addition to the material grown in the experimental plots for this purpose, large samples of all the prize field crop material exhibited at the Provincial Winter Fair at Guelph have been obtained.

## FARM ECONOMICS DEPARTMENT.

During the past year the surveys previously commenced in the apple-growing districts in Durham and Northumberland counties, in the fruit districts of the Niagara peninsula, and in corn-growing districts in Kent county were continued.

This was the third year for the Durham and Northumberland counties survey and the second for the Niagara and Kent surveys.

In Niagara, complete records were obtained of 125 farms. A short report of the findings of this survey was made and published in the spring of 1922.

In Durham and Northumberland counties, complete records were obtained from 244 farms. These records are now being worked up and will be analyzed. Following analysis of the business, a report will be issued on the findings of the survey.

The findings of the Kent County survey, which are the result of the analyses of the records of 251 farms, have since been prepared in brief report form and will be sent out in the course of a few weeks.

In addition to the work that has been done on the surveys which were made during the past year, reports were prepared and sent out both in preliminary or brief form and in full bulletin form of the previous year's surveys in Durham and Northumberland counties and Kent county. The full report of these two surveys, covering the farm year, May 1st, 1920, to April 30th, 1921, was published as Bulletin No. 288.

Summarized very briefly, the past year's survey work has shown a continued deflation of values—lack of efficient marketing facilities—resulting generally in decreased revenues accompanied by continued high operating expenses.

During the past year this work has been enlarged to include complete cost accounts on twenty farms in Kent county, so that during the past year eighty farmers have co-operated with the department in studying costs of production. Twenty-five farms are situated in Oxford county, twenty-five in Dufferin county and adjacent parts of the counties of Wellington and Peel, ten in the counties of Northumberland and Durham, and, as stated before, twenty in the county of Kent.

During the year the records from the Oxford county farms and those from the Dufferin county area have been carefully studied and costs of producing oats, hay, milk, beef, pork, poultry, silage, roots, etc., computed. A report is also being prepared based upon the reports for the farms in Northumberland and Durham counties and when completed will give interesting and accurate data on the apple-growing and mixed-farming business as carried on in these counties.

The Kent county farmers' books have required the usual careful supervision accorded all farmers' records, during the first year in which the farmer co-operates with the department in cost work. This supervision consists of frequent visits to farmers to clear up difficulties and to see that all farmers are making the entries in the same way in order that no difficulty will be encountered in tabulating and also to encourage those who feel that the task of keeping detailed accounts is very great.

It should be emphasized that the value of cost accounts to the farmer is an aid in reorganizing the farm business upon a more profitable basis and not as a basis for price-fixing.

During the month of March, the first systematic study of marketing to be undertaken in Canada was begun in the cheese-producing counties of Ontario. In all, about 112 cheese factories, or about one-eighth of the total number in the province, were visited by representatives of this department, and information obtained regarding the equipment, cost of manufacture, output, management, etc. This information has been completed and tabulated and will shortly appear in Bulletin No. 291. This investigation of the facilities for marketing cheese is but the first of a series of studies of a similar character.

## POULTRY.

There has been a general increase in all the activities of the Department. There were one hundred and eighty-eight breeding stations in operation during the year. These breeding stations had fourteen thousand hens which were used to supply eggs for rural schools. The number of pedigree Barred Rock cockerels used was eight hundred and twelve. The supplying of the breeding stations with pedigree cockerels is no small undertaking. The extension worker culled

over 20,000 hens during the season. Some experimental work was done in the study of chick nutrition.

## PHYSICS.

Practical assistance offered by the department to those who are interested in the various operations included under the following heads, the Department of Physics is prepared to supply complete information, and, where possible, to give assistance:—

1. Hydraulic rams; installation and operation.
2. Sewage disposal plants.
3. Lightning-rod systems.
4. Drainage surveys; tile underdrains and open ditches.
5. Labor-saving devices for the home.
6. Fresh-water supply systems for rural districts.
7. Ice-houses; construction and ventilation.
8. Silos; cost of construction; capacity.
9. Anti-freeze mixtures; efficiency and costs.
10. Materials for protection of bees in cold weather.

In co-operation with the office of the Fire Marshal for Ontario, information relating to spontaneous combustion was broadcasted throughout the Province of Ontario, and we expect that this year's report will show a rapid decrease of fires from spontaneous combustion.

Research work has been carried on, investigating the possibilities for more extensive use of the septic tank as a sewage disposal system.

Tests have been made of all types of water systems with the object in view of determining the accessibility of the parts, the strength and the efficiency of the various systems.

## HORTICULTURE.

The policy of the Department of Horticulture has changed somewhat in that more attention is now being given to the production of vegetable and fruit crops for use in the College dining hall. Changes have been made in the College campus to meet the demand for changes brought about by the great increase in buildings since the landscape area was originally planned. The greenhouse work has become more of the commercial type than formerly. Considerable plant material has been sold to florists and amateurs. A new small-fruits plantation was established during the year. Plant-breeding has been continued with asparagus, beans, beets, celery, lettuce, onions, rhubarb, cabbage, cucumbers, gladioli, apples, plums, pears and strawberries. Potato-selection work has progressed favourably and some interesting decrease resistant types have been found.

### Vegetable and Potato Work.

With a change in staff this work is now directed under the Department of Horticulture. Considerable educational work has been carried on during the year among the commercial vegetable growers, the main feature bring demonstrations to control insect and fungus diseases.

In practically all celery-growing districts, spraying with dust has been followed, and a good deal of useful information obtained, although not all the results were satisfactory. Best results were secured where dust was used in

large quantities. Work along this line will be continued, as it is felt there is a considerable future for dust spraying in the control of diseases.

The potato work has been continued. Inspection of fields and crops has been carried on in order to certify the seed in the work of standardizing varieties. Numerous experiments have been carried out under the immediate supervision of agricultural representatives with a view to ascertaining the importance of source of supply in seed potatoes. Seed secured from New Ontario, Old Ontario, and New Brunswick was compared and the results have proven most interesting. Work has also been carried on in the control of certain diseases, especially leaf-roll and mosaic. Details as to the results will be found under the heading of the Agricultural Representatives Branch.

## DAIRY HUSBANDRY.

The Dairy Department has been given a complete new building and is now in a position to render better service generally to the dairy industry of the province.

Investigations were carried on as follows:—

1. Relation of fat in milk to yield and quality of cheese.
2. Effect of sweet clover fed to cows producing milk for cheddar cheese-making.
3. Effect of having curds laid on the flat and on edge after making.
4. Effect of increasing the quantity of rennet in cheese manufacture.
5. Relation of the acidity of the milk separated to the acidity in the cream.
6. Development of acidity on milk and cream.
7. The pasteurization of buttermilk at creameries where cream is not pasteurized.
8. The effect of sweet clover on the flavour of butter.
9. Whey butter.
10. Tests for whipping cream.
11. Milk powders for culture.
12. Buttermaking experiments.
13. Effect of using "starters" on quality of butter.

## BOTANY.

Purity tests of commercial seeds were made of a large number of samples of clovers—timothy, lawn-grass, cereals, and feedstuffs were made during the year. Over fifty per cent. of all the seed materials submitted for analysis graded below number one of the Seed Control Act grade.

Two plant diseases new to the province—pink rot of onion, and white rot of grapes—were investigated by the department with a view to discovering a control.

Investigational work in economic botany was carried on during the year, largely in co-operation with practical farmers, as follows:—

1. Co-operative experiments in weed eradication.
2. Potato-disease investigation in co-operation with Agricultural representatives.
3. Spraying and dusting experiments in control of late blight of celery.
4. Field experiments to test the "dry formaldehyde treatment" for the prevention of oat smut.

5. Experiments in the control of pod spot or anthracnose of beans.
6. Experiments in the prevention of rhezoctonia or black scurf of potatoes.
7. Investigations regarding the humidity of commercial greenhouses and its effect upon the prevalence of diseases of greenhouse plants.
8. A study of the fungus flora of sweet-clover ensilage with the object of determining to what extent, if any, fungi are responsible for the development of toxic substances in such silage.
9. Investigations in the cause and means of control of blight and root rot of field peas.
10. A five years' experiment in co-operation with the Department of Entomology to determine whether financial gains are to be secured by spraying commercial vineyards for control of insects and fungus diseases, and to determine the time and number of sprayings to recommend for best results.
11. A cereal treatment project in co-operation with the Crop Protection Institute of the United States.

## AGRICULTURAL CHEMISTRY.

The reconnaissance survey of the older part of this province was completed in 1919. The detailed survey of Ontario soils was commenced in August, 1922, and 100 square miles of the county of Kent was mapped. This is fundamental work in the study of the soils of the province and will be pushed ahead as fast as possible. The material for a bulletin dealing with the reconnaissance survey, the origin of the various series and types of soil, and their characteristic composition, is well in hand and will be ready for publication in the spring.

Soil fertility experimental work of a definite type, started at various points in the province, notably Guelph, Norfolk and Welland, some years ago, are giving results and provide a local illustration of the solution of district problems. Fertilizer experiments were carried out in co-operation with farmers on their own land with a view of demonstrating the proper use of chemical fertilizers.

Investigations in relation to milk and its products were carried on in co-operation with the Dairy Husbandry Department.

The millers and bakers sent in many samples of wheat and flour for test. Milling and baking tests were carried on for the Field Husbandry Department. Chemical studies were made of new fodder plants, particularly the sunflower and sweet clover.

## BACTERIOLOGY.

Bacterial cultures for legume seed inoculation were sent out to farmers over the province, as follows: Alfalfa, 1,896; sweet clover, 1,036; red clover, 758; peas, 299; alsike, 129; beans, 49; sweet peas, 37; soy beans, 21; cow peas, 6; white clover, 5; vetch, 4; crimson clover, 2.

Bacterial cultures for creameries, cheese factories and farm dairies were sent as follows: 134 lactic starters and 27 bulgaricum cultures.

A total of 256 morbid specimens were examined, including samples from poultry, cattle, sheep, swine, man, bees, rabbits, and plants. A total of 83 samples of farm well-water were examined, of which 58 were condemned for pollution.

Many samples of milk, butter and ensilage were examined for favourable and unfavourable conditions induced by micro-organisms. An extensive microbiological investigation was made of sweet-clover silage, and the following

conclusions arrived at: In silage made from sweet clover before it is too mature, that is well and tightly packed in the silo to exclude air, the conditions prevailing induce a fermentation apparently due mainly to certain acid-forming bacteria, accompanied by a rise in temperature and inhibition of the growth of putrefactive bacteria, yeasts and molds.

## APICULTURE.

The College apiary has been increased to one hundred and fifty colonies. These colonies have been divided into four apiaries, three near Guelph and one at the Experimental Farm at Ridgetown. This latter apiary is for the rearing of pedigreed queens.

The work of the Ontario Beekeepers' Association, of which the professor of apiculture is secretary, developed into a larger sphere than in previous years. In an effort to organize the beekeepers of the province into a co-operative buying and selling association, the secretary's office purchased bees, queens, bee supplies and honey containers to the value of $86,952.35. The Association showed a year's business of $94,829.39. By buying in a co-operative way, the secretary's office saved the beekeepers $13,810.80 directly, and a very considerable amount indirectly, because of the lower prices paid for honey containers bought direct from the manufacturers. An effort is now being made to form a co-operative buying and selling organization.

## DRAINAGE WORK.

The work carried on by the Drainage Department this year has been somewhat extended. This has been made possible by the fact that the permanent men on the field staff have been on the job long enough to be familiar with the various phases of the work and are competent to undertake extended assistance to the farmers and municipalities along with the regular work of preparing plans and specifications for actual field operations. This assistance has taken the form of more extensive surveys, inspection of field operations, addressing farmers' clubs, addressing township councils with respect to drainage legislation in the township, and the conducting of special drainage meetings.

The following table shows the extent of the field work completed this year:—

| County. | No. of Surveys. | Acres. |
|---|---|---|
| Algoma | 3 | 196 |
| Bruce | 5 | 233 |
| Dundas | 1 | 40 |
| Durham | 1 | 50 |
| Essex | 12 | 845 |
| Grenville | 1 | 25 |
| Halton | 9 | 267 |
| Hastings | 4 | 275 |
| Huron | 11 | 525 |
| Kent | 11 | 880 |
| Lambton | 6 | 530 |
| Lanark | 4 | 239 |
| Leeds | 5 | 116 |
| Lennox and Addington | 1 | 500 |
| Lincoln | 17 | 592½ |
| Middlesex | 6 | 180 |
| Norfolk | 3 | 37 |
| Ontario | 2 | 136 |
| Oxford | 9 | 260 |
| Peel | 1 | 25 |
| Perth | 1 | 200 |
| Simcoe | 1 | 100 |

| County. | No. of Surveyr. | Acres. |
|---|---|---|
| Victoria | 7 | 165 |
| Waterloo | 2 | 70 |
| Welland | 2 | 180 |
| Wellington | 8 | 383 |
| Wentworth | 7 | 266 |
| York | 2 | 200 |

Several requests for special surveys have been made during the year. A number of the farmers living in Wainfleet township, Welland county, became very much interested in the lowering of the water level in the old Welland canal feeder, which would form an outlet for some forty thousand acres of unimproved land, much of it very swampy and only utilized some seasons for rough hay. Early in March, Mr. Shorey made a complete survey of the feeder, north and south back ditches and all open ditches leading toward the back ditches. Plans and profiles of the whole scheme were prepared for a deputation which went to Ottawa to wait on the proper authorities and a representative accompanied the deputation, which was well received and their request was promised consideration. In June, Mr. Jost, an engineer for the Department of Railways and Canals at Ottawa, came to Welland and in company with those interested in the scheme and a representative of the Drainage Department, O.A.C., made a thorough inspection of the scheme. Mr. Jost was quite impressed with the justification of the request and thought that something could be done to relieve the suffering from flooded conditions. Up to the present time nothing has been done, but the settlement of several factors pertaining to the construction of the new Welland canal and the water level in the Welland river. We hope that conditions will permit the improving of this large area of fertile agricultural soil.

A number of the farmers' clubs, particularly those in the districts where the permanent men are located, made requests for speakers on drainage. This has aroused much interest.

As drainage activities are extended, more municipalities become interested in securing financial assistance for their ratepayers. Consequently, it is necessary for them to consider passing a by-law under the "Tile Drainage Act." Three municipalities had this under discussion this year, when a representative of this branch attended. These were at Orillia, Sheppardton and Beachville. The Oxford North township council at Beachville passed a by-law to borrow $25,000. The others laid the business over for further discussion.

Many requests from farmers have been made for assistance in checking up the work of installation. These generally follow the survey. In several instances, however, these requests have come from farmers who have had no survey, and almost invariably there has been faulty construction,—either in the system being used or the method of installation. Other cases of suspicious installation have been called to our attention and some very poor machine work has been observed. In one instance the operator had moved out of the district before our man arrived.

We are convinced that this is a very important phase of the drainage work, which is urgently in need of further development. When farmers go to the expense of tiling their land, it is important that they get good tile as well as good work on the installation, and assistance in this respect is invaluable. Frequently the quality of the tile is poor and the farmer needs some protection in this respect.

Machine Operators' Certificates.—A number of inspections relative to operators' certificates have been made during the summer and fall. We have experienced considerable difficulty in this work in being able to make the inspec-

tion at an opportune time. Facilities for an inspection at any time unknown to the operator would be much more effective and more than one inspection should be made before the certificate is granted.

Following last year's short courses, some fifteen men wrote the examinations for drainage certificates, which makes up to date thirty-six men who have written the examinations. A number of these have received their certificates; others have qualified this fall and their certificates are being prepared. We hope to further promote this branch of developing proficient operators.

Short Courses.—During January and February three two-week short courses were conducted, one at each of the following places,—Guelph, Essex, and London. In holding them in these various centres, an endeavour was made to facilitate the attendance of the operators who could not get away from home for two weeks. The classes were not largely attended but great interest and appreciation was shown by the men who availed themselves of this opportunity. Some fifteen certificates will be issued as a result of last winter's short courses.

Ditching Machines.—None of the machines were used for demonstration work this year. Two of them were used on commercial work and the third was not moved.

We have endeavoured to assist machine owners moving into new territory or men purchasing new machines by putting on field demonstrations, showing the machine at work and discussing drainage operations with those who attend. A very successful meeting of this kind was held near Bowmanville in Durham county. Some thirty-five men were present to observe the machine working, the laying of tile, blinding and backfilling. Several addresses were given on drainage and machine operation and a very helpful and interesting discussion followed.

## Demonstration Plots.

No new demonstration plots were established this year. Below we submit reports of two out of the three plots we put in in 1921. The third plot was seeded and the owner was unable to furnish a detailed report:—

| Owner | Address | Crop | Yield in Bus. per Acre | | Increase per Acre | Value of Increase per Acre |
|---|---|---|---|---|---|---|
| | | | Drained | Undrained | | |
| A. Stean | Pakenham | Oats | 60 | 19⅕ | 40⅘ | 18.36 |
| J. B. Leach | Verner | Oats | 71¼ | 52½ | 18¾ | 8.44 |

The increase per acre was reckoned on the price of oats the first of December, 1922—45 cents per bushel.

In a year that was quite favourable for undrained lands, the report shows decided financial returns. This is accounted for by the earlier spring seeding, better stooling of the grain and better physical condition of the soil by reason of the installation of the drains.

## PUBLICATIONS AND STATISTICS

The work of compiling agricultural statistics was carried on in co-operation with the Federal authorities. The results are published from time to time as completed.

The distribution of the Annual Reports has been continued and the following are the figures of the numbers printed for distribution:—

| | |
|---|---|
| Minister's Report | 5,000 |
| The Ontario Agricultural College | 5,000 |
| The Experimental Union | 30,000 |
| Agricultural Societies and Field Crop Competitions | 19,000 |
| Horticultural Societies | 32,000 |
| Vegetable Growers' Associations | 5,000 |
| Live Stock Branch | 5,000 |
| Stallion Enrolment Board | 2,500 |
| Agricultural Statistics | 25,000 |
| Fruit Growers' Association | 4,000 |
| Entomological Society | 3,000 |
| Beekeepers' Association | 4,500 |
| Women's Institute | 40,000 |
| Total | 180,000 |

The following crop bulletins have been printed for distribution:—

| | | |
|---|---|---|
| 149 | November, 1921 | 20,000 |
| 150 | April, 1922 | 4,000 |
| 151 | May, 1922 | 4,000 |
| 152 | August, 1922 | 6,000 |

Other bulletins printed for distribution were:—

| | | |
|---|---|---|
| *250 | Insects Attacking Fruit Trees | 15,000 |
| *252 | The Preservation of Foods: Home Canning | 15,000 |
| 284 | Milk Production Costs | 15,000 |
| 285 | Flour and Breadmaking | 15,000 |
| 286 | Farm Management: Part IV | 10,000 |
| 287 | Silos and Silage | 40,000 |
| 288 | Farm Management: Part V | 30,000 |
| 289 | The Cabbage Maggot | 6,000 |
| 290 | The Rural Literary and Debating Society | 12,000 |
| Special (without serial numbers):— | | |
| | Co-operative Marketing | 50,000 |
| | Debates and Plays | 15,000 |
| | Total | 223,000 |

Circulars were printed for special distribution as follows:—

| | | |
|---|---|---|
| 39 | Beef Rings | 6,000 |
| 40 | The Cabbage Maggot | 6,000 |
| 41 | Sweet Clover | 12,000 |
| (Special) | Destruction of Wolves | 6,000 |
| | Total | 30,000 |

*New editions.

## ONTARIO VETERINARY COLLEGE

For the last session which ended April 30th, a total of 86 students were in attendance, of which 11 were in the first year class, 22 in the second year class, 35 in the third year class, and 18 in the fourth or senior year class. Of the senior class, all were successful in passing the final examinations and were granted the degree of Bachelor of Veterinary Science (B.V.Sc.) by the University of Toronto. It is worthy of mention also that all of the members of the graduating class were successful in passing the civil service examination of the Department of Agriculture for veterinary inspectors. During the present session, which commenced on October 2nd, 1922, a total of 84 students have been enrolled, of which 16 are in the first year class, 11 are in the second year class, 23 are in the third year class, and 34 are in the senior year class. While this shows a slight decrease in the total attendance from last year, there is, however, an increase in the first year class, which is encouraging. The general depression and financial stringency prevailing, more especially in the western provinces, has no doubt exercised deterrent influences on the attendance. It is hoped that this will not long continue and that the attendance will regain normal proportions. A noticeable improvement in the type of student is becoming apparent and is due to the higher entrance requirements which are now based on a high school education equivalent to junior matriculation.

### Removal of the College

With the incidental transition during the period of the great war, the rapid urban growth, and the increasing demand for food-producing animals, the expansion of veterinary science and its altered field of usefulness, it gradually became apparent that the centre of a large city, such as Toronto, was in some respects no longer the best place for a veterinary college to fulfil its manifest obligations. In this connection it is worthy of note that when the College was first established, the activities of the profession were largely directed to the horse in health and disease. As a result the education and training of prospective candidates for the profession had to be conducted preferably at such centres where the number of horses was the greatest, as in large cities. Coincidently, the other classes of farm stock, namely, cattle, sheep, swine and poultry, constituting the food-producing animals, have been steadily increasing in importance and now present a much wider sphere of veterinary opportunity than formerly. Veterinary education, training and practice, though concerned as before with the horse, is being confronted with additional demands in conserving the health of animals, controlling infectious diseases, safeguarding the public health against unwholesome food supplies and the maintenance of an inspection service to enable an export trade to be developed in live stock, dressed meats and allied food products. To meet the needs it was proposed to establish a new institution at a location providing for greater expansion and wider facilities than were available at Toronto, the idea being in mind to retain urban advantages and in addition to secure closer contact with agriculture and animal industry. After carefully considering the essential requirements of veterinary education, training and practice, you wisely decided to establish a more adaptable institution at Guelph, adjacent to the Agricultural College. The erection of the new buildings was begun in during 1921 and they were completed in time for the present session which commenced the first of October, 1922. The location, buildings and equipment combine in making what is generally considered to be one of the finest institutions of the kind on the continent.

## Grounds, Buildings and Equipment of the New College.

The grounds are ideally located on "College Heights," fronting the main avenue known as the Brock or Dundas Road. The buildings are set back about one hundred feet from the road in front, which is paved and lined on each side with a row of large trees, making a very desirable avenue approach. The main college building is a handsome new three-storey structure fully modern throughout in arrangement, in facilities and in equipment. The exterior is designed in the modern renaissance style and is particularly pleasing with grey sandstone and plum-coloured tapestry brick facings. In outline it comprises a central portion one hundred and fifty feet in length, with two wings one hundred and thirty feet in length extending on each side. Wide stone steps make an imposing entrance to the central portion, which is surmounted with a handsome cupola. A wide corridor extends the full length on each floor and with the stairs and elevator permits ready access throughout. On the main floor are situated the executive offices, faculty room, assembly hall, library, reading room, classrooms and museum. The ground floor has a students' entrance at each end connected by a wide corridor. On this floor are the students' sitting and recreation rooms, coat room, post office, pharmacy laboratory, class room, dispensing room, instrument room, consulting office, clinical amphitheatre with surgical ward and dressing room. The third floor contains fraternal room, three classrooms, the zoology, histology, pathology, parasitology, bacteriology and anatomical laboratories, with adjoining preparation rooms, staff offices and ward for small laboratory animals. All of the classrooms and laboratories are exceptionally well lighted and properly ventilated, and with the complete equipment and modern conveniences throughout provide many advantages for the comfort and well-being of the student.

## Classrooms.

There are six separate classrooms, each providing seating accommodation for over one hundred students. The classrooms are properly ventilated and well lighted, with the lighting coming from the left side and rear of the student, thus avoiding any glare and shadow effects. Each room has ample blackboard accommodation and the seating is suitably arranged to enable the student to write lecture notes. Provision has also been made whereby use can be made in the lecture rooms of a projector and lantern for demonstration purposes, showing illustrations, lantern slides and microscopic preparations.

## Laboratories.

There are four large special laboratories assigned to practical work in pharmacy, anatomy, zoology, histology, pathology, parasitology and bacteriology.

The pharmacy laboratory is on the ground floor adjacent to the clinical amphitheatre. It is conveniently arranged, well ventilated, suitably lighted, and individual benches with the necessary equipment are provided for the use of each student. It is adapted for lecture and laboratory instruction, with accommodation for a class of about one hundred students. A smaller adjoining room serves as a preparatory laboratory room for research work, and in the compounding and dispensing of materials required for class purposes.

The anatomical laboratory occupies one of the wings on the third floor and is considered to be one of the largest and most complete of the kind. The lighting, ventilating and sanitary arrangements have been specially considered, making it very adaptable for anatomical studies and post-mortem examinations. The

floor is concrete, sloped to drains, the walls finished in hard cement, smooth-surfaced, and the dissecting tables are of white enamelled metal. An elevator connects it with the ground floor, enabling animals to be easily and readily transported up or down as desired. A commodious dressing room and wash room is also available for the use of students.

The zoology, histology and pathology laboratory extends around part of the front and one end of the third floor. The parasitology and bacteriology laboratory is similarly arranged at the other corner of the building. As both of these laboratories are of the same design and arrangement, they may be conveniently described together. Being placed at each corner, window light is available from two sides and with a large skylight in the centre a maximum of natural light is secured. Each laboratory provides accommodation for a class of over sixty students at a time, and is arranged on the unit plan with individual bench accommodation. A complete laboratory outfit is furnished each student, including microscope and other necessary apparatus used in the preparation of tissue sections, the mounting and preparing of slides and making of culture media. The general equipment is complete and modern in every respect, including microtomes, paraffin baths, autoclaves, Arnold and hot-air sterilizers, incubators, centrifuges, refrigerators, media cabinets and other laboratory conveniences. Connected with each laboratory are two smaller laboratories for the use of the instructors in the preparation of material and for research work. A small animal ward is conveniently located adjacent to the laboratories for research and experimental purposes.

### Clinical Amphitheatre.

The clinical amphitheatre is located in one of the wings on the ground floor. The seating is arranged in elevated sections, providing a full view during demonstrations and operations. The equipment includes operating tables for large and small animals, restraining stocks and stalls. Hot and cold water is provided with wash basins and sinks conveniently placed. Connecting with the amphitheatre is a special surgical ward and a dressing room. The instrument room, dispensary and consulting room are also in direct communication so that the whole arrangement is very complete.

### Veterinary Hospital.

The veterinary hospital is a substantial two-storey building situated near the main college building. It consists of a central portion with projecting wings so as to provide separate sections for the different classes of live stock, and has accommodation for over forty animals. The sections for horses and cattle are situated at each end of the central portion and comprise both open and closed stalls to accommodate over twenty animals comfortably. The sections for sheep and swine are contained in the projecting wing and provide accommodation for over twenty animals. The section for small animals is arranged for on the second storey with suitable kennels for dogs and cats. The stable fittings, lighting, ventilation and drainage have been specially considered, in keeping with modern requirements.

### Special Departmental Facilities.

The facilities and departmental buildings of the Agricultural College are available for class lectures and laboratory instruction in animal husbandry, chemistry, botany and physics. The veterinary students receive instruction in

these subjects from the staff of the Agricultural College. In fact, the close proximity of the Veterinary College and Agricultural College to each other will afford many mutual advantages.

### Adjustment of the Teaching Staff.

The removal of the College to Guelph has necessitated several changes in the personnel of the teaching staff, largely due to the fact that several members of the faculty were engaged on a part time basis and they were unable to remove from Toronto. As a result the College has lost the services of many lecturers and instructors who have rendered splendid service in past years.

Some new names have been added to the faculty and the work re-arranged and the College now has what is considered to be a well-equipped and well-balanced staff.

### The Course of Study and Instruction.

The transfer of the College to Guelph has necessitated some modifications in the course. Formerly at Toronto, the veterinary students received instruction in chemistry, biochemistry, physics and botany from the staff of the University of Toronto. Instruction in these subjects is now being given by the staff of the Ontario Agricultural College and in some subjects the instruction is being extended over a longer period. In the case of animal husbandry, the course of instruction has been greatly improved owing to the splendid facilities and capable staff of the Agricultural College being availed of. It is also expected that the new location will enable a greater amount of clinical instruction to be given than heretofore, owing to the many large, fine herds being in close proximity. This is very essential in order to properly train students in the art of diagnosis as well as the prevention and treatment of disease.

### Research and Investigational Work.

During the past year considerable research work has been carried on by members of the staff in the laboratories and by actual investigations on farms throughout the province. A special investigation was conducted in connection with serious losses occurring seemingly through the feeding of mouldy sweet-clover ensilage and hay. Throughout the year a large number of diseased specimens have been received at the College for examination from veterinary surgeons and livestock owners. In each case a careful laboratory examination was made and a report furnished. This is an extension service of great value in determining the essential nature of diseased conditions and its usefulness is being more fully realized from time to time as evidenced by the noticeable increase in the number of specimens from diseased animals being sent to the College for examination. The extent of this work is indicated in the reports of Doctors Batt and Gwatkin, which are submitted herewith. An outline of the subjects being taught and a list of the instructional staff is appended herewith.

### Veterinary Practice Board.

Meetings of the Board have been held from time to time as required to consider applications for certificates. Special sittings of the Board were also held in order to give doubtful applicants an opportunity of appearing in person to substantiate their claims for a certificate. During the year Certificate Form No. 1 has been issued to forty-eight applicants who have submitted evidence of graduation from a recognized veterinary college.

## AGRICULTURAL SOCIETIES BRANCH

In no year, either previous to the war or since, have the Agricultural Societies of Ontario shown such an advance as they did in 1922. During the previous year many of them met with heavy losses on account of the extremely wet weather which adversely affected the gate receipts. Ideal conditions as a rule prevailed in 1922, and only a few societies found it necessary to apply for a share of the legislative grant set apart to partially reimburse societies, the gate receipts of which (one of the principal sources of income) had been seriously lessened by unfavourable weather. The maximum amount payable to any one society is $500, and only one society, Belleville, had losses sufficient to reach that sum.

Almost without exception secretaries of agricultural societies and departmental judges report larger exhibits in all departments of fall fairs, and better attendance of visitors than for many years. It is noteworthy that horse classes, which on account of the great increase in automobiles and also the lack of competent farm help, had not been filled of late as well as formerly, contained this year a splendid lot of animals, both light and heavy.

Agricultural Societies are conducting among others two very important lines of work, both of them of the greatest value to the province and the Dominion, viz., holding exhibitions and conducting field crop competitions and making a success of both. The standing field crop competitions, organized in 1907, have brought to the farmers of this province thousands of dollars on account of the prices received for the better and cleaner grain and the standard varieties of potatoes which they have been encouraged to produce and from the sale of which they have realized prices much higher than those paid for the ordinary run of seed grain and potatoes. Nearly one half of the Agricultural Societies of Ontario are taking part in the regular standing field crop competitions and each year sees additional societies making entry. The combined standing field crop and threshed grain competitions, which were organized in 1921, in conjunction with the Seed Branch of the Department of Agriculture, Ottawa, met with the approval of an increased number of societies last year, and will be the means of adding very largely to the supply of clean registered seed grain and certified potatoes in the province, the stocks on hand of which have hitherto been insufficient to meet the demand that has arisen for high-class seed. The continued development of this line of work will help to make Ontario the centre of the seed-producing provinces.

At the Canadian National, Central Canada, Guelph, Ottawa, and Royal Agricultural Winter Fairs, where the seven prize-winners in the field crop competitions and those scoring eighty-five points and over were eligible to compete, there was staged the finest exhibit of grain and potatoes in the lengthy history of the Agricultural Societies of Ontario.

### HORTICULTURAL SOCIETIES

The desire to beautify the cities, towns, villages, and rural communities of this province gathers fresh impetus each year, and there were added to the list of Horticultural Societies in 1922, thirty new branches. The good work is not confined to the larger urban centres, but is carried on quite as enthusiastically by the township societies. The time for organizing new societies is between April 8th and 14th. Judging by applications already received for permission to

organize in 1923, the increase that has been maintained each year will be equalled if not surpassed. There is now an active membership of over 40,000, spread over the province, and these serve as a valuable nucleus to spread still further the gospel of a better, cleaner and brighter Ontario.

From New Ontario have come several requests for information as to organizing new societies, which is an encouraging omen.

The creation of provincial highways and the great improvement in other main roads has also given an impetus to the organizing of Horticultural Societies. Tourists by the thousands now use the roads of Ontario, and the many towns and villages through which they pass endeavour to rival one another in the beautification of their streets, homes and surroundings, so that they may give those passing along a good impression of our province.

## ONTARIO VEGETABLE GROWERS' ASSOCIATION

The Ontario Vegetable Growers' Association held their usual field crop competitions, and the quality of the exhibits was quite up to standard. The low price received for their products had a somewhat depressing effect on the membership, but they are not discouraged and are hopeful for better prices in 1923. The garden competitions, for gardens consisting of not less than three acres, have improved the surroundings of those who entered. The judges for these competitions were supplied by the Department of Agriculture.

## ONTARIO PLOWMEN'S ASSOCIATION

Nineteen twenty-two proved a banner year for this Association, which was organized in 1913.

All the branches in the province from Glengarry to Northern Ontario have held local matches, and increasing interest in better plowmanship and the better cultivation of the soil is noted wherever these branches are established. The membership has more than doubled in the last two years, and the boys on the farm are participating in this splendid educational work.

Following the practice of former years, the Ontario Plowmen's Association held what is now known as the International Plowing Match, Tractor and Farm Machinery Demonstration on October 11th, 12th and 13th, 1922. As the matches have generally been held in western Ontario, in order to give the farmers of the eastern counties an opportunity to display their skill with the plow, and to see twentieth century power machines in operation, and all appliances used on Canadian farms and Canadian farm homes, Lindsay, centrally located and with excellent railway facilities, was the choice for 1922. The entries and exhibits were the largest on record and crowds of farmers from all parts of the province were in evidence and the keenest possible interest taken in the work of this progressive association. Upwards of $2,000 were offered in prizes and a special train service granted by the railways.

# LIVE STOCK BRANCH

One of the new activities of this branch during the year was assistance and supervision of exhibits of Ontario pure-bred stock at big international shows across the line. This was undertaken to bring Ontario stock more prominently before outside markets, and the results were very gratifying. Following is a statement of the prizes won:—

## SUMMARY OF AWARDS OF ONTARIO EXHIBITS AT NATIONAL DAIRY EXPOSITION, ST. PAUL, OCTOBER 7TH-14TH.

### HOLSTEINS.

In a Class of 14—10th, placing.
" " 12—10th, "
" " 10—2nd, "
" " 10—8th, "
" " 12—5th, "
" " 25—1st, and Jr. Champion.
" " 36—3rd, placing.
" " 17—1st, 3rd and Grand Champion.
" " 20—5th, placing.
" " 33—3rd, "
" " 26—9th, "
" " 28—2nd and 6th, placing.
" " 47—5th and 9th "
Get of One Sire 25—3rd, placing.
Produce of Dam 21—3rd, "
State Herd, 5—2nd, "

*Summary.*

| | |
|---|---|
| Total No. of Ontario Holsteins | 26 |
| " " Placings of Ontario Holsteins | 19 |
| Championships | 2 |
| Total No. of Animals Exhibited | 290 |

## SUMMARY OF AWARDS OF ONTARIO EXHIBITS AT THE CHICAGO INTERNATIONAL, DECEMBER 2ND-9TH, 1922.

### CLYDESDALE STALLIONS.

In a Class of 8—3rd, placing.
" " 10—1st and Res. Champion, 2nd and 4th placing.
" " 16—2nd, 3rd, 6th and 7th placing.

### CLYDESDALE MARES.

In a Class of 20—3rd, 7th and 9th placing.
" " 12—1st and Res. Champion.
" " 17—4th, 6th and 7th placing.
" " 12—2nd and 4th placing.
" " 26—3rd placing.

*Summary*

| | |
|---|---|
| Total No. of Ontario Clydesdales | 21 |
| Total placings of Ontario Clydesdales | 18 |
| Championships | 2 |
| Total No. of animals exhibited | 121 |

SHORTHORNS.

In a Class of 23—5th placing.
" " 54—4th and 5th placing.
" " 51—4th placing.
" " 22—4th "
" " 27—9th "
" " 46—3rd "
" " 85—5th and 15th placing.
" " 13—4th placing.
" " 29—6th "
" " 37—9th "

*Summary.*

| | |
|---|---|
| Total No. of Ontario Shorthorns | 10 |
| Total placings of Ontario Shorthorns | 12 |
| Total No. of animals exhibited | 387 |

ABERDEEN ANGUS.

In a Class of 17—10th placing.
" " 25—10th and 11th placing.

*Summary.*

| | |
|---|---|
| Total No. of Ontario Aberdeen Angus | 4 |
| Total No. of placings of Ontario Aberdeen Angus | 3 |
| Total No. of animals shown | 42 |

SHROPSHIRES.

Breeding Class.

In a Class of 13—4th placing.

*Summary.*

| | |
|---|---|
| Total No. Ontario Shrops. exhibited | 10 |
| Total No. animals exhibited | 13 |
| Total No. Ontario placings | 1 |

OXFORD.

Breeding Class.

In a Class of 25—4th placing.
" " 7—1st. "

*Summary.*

| | |
|---|---|
| Total No. Ontario Oxfords exhibited | 3 |
| Total No. Ontario Oxfords placings | 2 |
| Total No. animals exhibited | 80 |

LINCOLN.

Breeding Class.

In a Class of 7—1st, 2nd and 5th placing.
" " 10—1st, 2nd and 3rd "
" " 18—1st, 2nd, 3rd, 4th and 5th placing.
" " 18—1st, 2nd, 4th and 5th, "
" " 20—1st, 2nd, 3rd, 4th and 5th "
Flock 7—1st, 2nd and 3rd, "
3 Ram Lambs 5—1st and 2nd, "
3 Ewe Lambs 5—1st, 2nd and 3rd "
Champ. Ram.
Res. Champ.
Champ. Ewe,
Res. Champ.

*Summary.*

| | |
|---|---|
| Total No. Ontario Lincolns exhibited | 50 |
| Total No. placings | 28 |
| Championships | 4 |
| Total No. animals exhibited | 73 |

COTSWOLD.

Breeding Class.

In a Class of 11—3rd placing.
" " 17—2nd and 5th placing.
" " 17—2nd and 4th "
" " 18—2nd and 4th "
" " 7—Reserve, "
" " 7—2nd, "
" " 6—2nd "
" " 7—2nd "

*Summary.*

| | |
|---|---|
| Total No. of Ontario Cotswolds exhibited | 13 |
| Total placings | 10 |
| Championships | 1 |
| Total No. of animals exhibited | 92 |

SOUTHDOWN.

In a Class of 4—4th placing.
" " 5—4th "
" " 12—1st, 3rd and 5th placing.
" " 17—3rd "
" " 20—4th and 5th "
" " 5—3rd "
" " 2—1st "
" " 5—3rd "

*Summary.*

| | |
|---|---|
| Total Ontario Southdowns exhibited | 15 |
| Total placings | 11 |
| Total animals exhibited | 69 |

LEICESTER.

In a Class of 4—1st placing.
" " 3—1st "
" " 5—1st "
" " 4—1s and 2nd placing.
" " 9—1st and 2nd "
" " 2—1st "
" " 3—1st "

*Summary.*

| | |
|---|---|
| Total Ontario Leicesters exhibited | 8 |
| Total placings | 9 |
| Total animals exhibited | 33 |

FAT CLASSES.

Shropshires, none. Ontario number exhibited, 8.

LINCOLN.

In a Class of 7—1st, 2nd and 3rd placing.
" " 15—1st, 2nd, 3rd, 4th and 5th placing.
" " 5—1st, 2nd and 3rd "
Champion Wether.

*Summary.*

| | |
|---|---|
| Total Ontario Fat Lincolns exhibited | 16 |
| Total Ontario placings | 11 |
| Championships | 1 |
| Total animals exhibited | 22 |

COTSWOLD.

In a Class of 4—2nd placing.
" " 12—2nd, 3rd and 5th placing.
" " 4—1st placing.

*Summary.*

| | |
|---|---|
| Total Ontario Fat Cotswolds exhibited | 9 |
| Total Ontario placings | 5 |
| Total animals exhibited | 20 |

SOUTHDOWN.

In a Class of 30—1st placing.

*Summary.*

| | |
|---|---|
| Total Ontario Southdown shown | 7 |
| Total placing | 1 |
| Total animals shown | 67 |

LEICESTER.

In a Class of 8—1st, 2nd and 3rd placing.
" " 4—1st, 2nd and 3rd "
" " 1—1st "
Champion Wether,

*Summary*

| | |
|---|---|
| Total Ontario Fat Leicesters exhibited | 10 |
| Total Ontario placings | 7 |
| Total No. animals exhibited | 13 |
| Ontario Championship | 1 |

OTHER CHAMPIONSHIPS.

Grand Champion Wether under 2 years, Robt. McEwen, London.
Grand Champion Wether of the show, " " "
Champion Carload of the show, 1st " " "
Carload lambs, 1st " " "

GRADES AND CROSSES.
Medium Wool.

In a Class of 45—1st placing.
" " 62—4th "
" " 15—3rd "

*Summary.*

| | |
|---|---|
| Total Ontario Grades and Crosses exhibited | 5 |
| Total Ontario placings | 3 |
| Total animals exhibited | 120 |

GRADES AND CROSSES.
Long Wool.

In a Class of 9—1st and 5th placing.
" " 27—1st, 2nd, 3rd, 4th and 5th placing.
" " 7—1st, 2nd and 3rd "

*Summary.*

| | |
|---|---|
| Total Ontario Grades and Crosses exhibited | 30 |
| Total Ontario placings | 10 |
| Total animals exhibited | 44 |

*Note.*—Please note that in every case the total number of animals exhibited means the total number exhibited where the Ontario animals were competing.

## Swine Work.

The activities of this branch in connection with hog-work, dealt with two projects during the past year: First, co-operating with the Agricultural Representatives Branch, in the establishment of educational courses for junior farmers, covering the judging and investigation of market requirements of swine.

The first of these courses was held in December, 1921, at the packing plants at Ottawa, Peterborough, Toronto, Brantford and Ingersoll. This was limited to nine junior farmers from each county, the province having been divided into six districts. Assistance was also given the Agricultural Representatives Branch in conducting a large number of these courses in connection with their regular short courses held during the winter of 1922.

These courses reached a much larger number of junior farmers, but in some cases the equipment did not admit of all the benefits being extended to these courses that was able to be extended where the course was held at a regular packing plant.

In December, 1922, the six courses at central packing plants were repeated.

The course was begun by getting the idea as firmly fixed as possible in the student's mind as to what a Wiltshire side was. From that we passed to a demonstration which would show him the type of carcass from which a Wiltshire side could be manufactured. The next step was to assist him in selecting the live hog which would yield a carcass from which a Wiltshire side could be manufactured. Competition was then held in judging and grading hogs, and the same hogs were afterwards slaughtered and the students given an opportunity to examine the carcasses and a competition held in judging the carcasses.

This work was supplemented by lectures on "Animal diseases and meat inspection," "A review of the bacon market and situation abroad."

## Bacon Hog Clubs.

At the session of 1922 an appropriation of $5,000 was voted for the encouragement of "bacon hogs" in the province.

A policy of loaning boars to approved clubs was then instituted. Owing to the fact that great care needs to be taken in the choosing of a boar, the proposition of assisting "Bacon Hog Clubs" was not widely advertised, but was taken up individually with the Agricultural Representatives.

A number of clubs have been formed. Boars have been purchased and sent to the clubs, and we believe that this work will have a great effect not only upon the quality of the stock produced, but also in the fact that the members are required to mark their hogs for sale. There will therefore be information regarding the grade of hogs marketed from these clubs, and from this information the breeding quality of each boar will be known.

The marking of hogs and securing the co-operation of the packers to grade the carcass on the rail, will form an opening wedge toward the proper grading of hogs in the province, which we believe should be done in the carcass room and not in the yard.

The knowledge of the breeding qualities of the boar can also be utilized later on if advanced registry for swine is attempted. We believe that it is better to carry on this work, securing as much information as possible, and from this information a plan for proper grading and advanced registration might be formulated.

Up to the present time, eighteen clubs have been formed.

List of counties in which clubs have been formed, showing number of clubs in each county, is given below:—

| County. | Number |
|---|---|
| Haldimand | 2 |
| Huron | 2 |
| Grey | 4 |
| Wentworth | 6 |
| York | 2 |
| Halton | 2 |
| Total | 18 |

## Livestock Improvement Campaign.

This work can be divided under the following headings:—

(1) Meetings of "Livestock Improvement Committee" and sub-committees. This last year there has been one meeting of the "Livestock Improvement Committee" and three meetings of sub-committees. At these meetings the general work for the province is planned, and policies are discussed and formulated.

(2) Supervising and preparing advertising and publicity material.

(3) Personal work with Agricultural Representatives.

(4) Attending meetings, and working with local committees and fieldmen of the Livestock Branch.

(5) Assisting Agricultural Representatives to form "Local Livestock Improvement Associations." This last year the following local associations have been formed:—

| | |
|---|---|
| Dundas County. | Grey County. |
| Perth County. | Durham County. |
| Huron County. | Carleton County. |

(6) Sending out of fieldmen and lecturers, also inspectors to inspect pure-bred bulls. Co-operating with local county associations to dispose of scrub bulls.

Dundas County.—Special campaign work was conducted in this county, and forty-seven approved bulls were placed in the county, to take the place of scrub and inferior bulls. Bonuses were paid in Dundas county to buyers of pure-bred bulls for the first time, which amounted to $516.60.

Oxford County.—The work in Oxford county has been going on for at least two years, and has been carried on largely through local men. A bonus system was introduced into Oxford in 1922, and so far the amount asked is $105.00.

Mr. Green reports at the last of the year that in his survey of five townships in Oxford county that whereas at the beginning of the campaign some 253 scrub bulls were in use, at the present time these have been reduced to about 30.

Peel County.—Peel county did not have any bonus system in operation. The work, however, was very satisfactory and a number of bulls have been changed. The work has been carried on largely through local fieldmen paid for by the Department of Agriculture. The members of the Livestock Branch have attended meetings, and have assisted the "Peel Livestock Improvement Association" wherever possible.

Huron County.— In 1921 there was a very strong campaign put on in Huron county, in which seventy bulls were replaced. Owing to various conditions it seemed difficult to secure active work in Huron county this last year. We believe, however, that Huron is now prepared to attempt this work and a Live-Stock Improvement Association has been formed. Work is being carried on

in two or three townships. A Fieldman supplied by the Department of Agriculture is assisting the Agricultural Representative and local men in the work.

Perth County.—This last year a local Live Stock Improvement Association has been formed, which has been quite active. A number of meetings have been held. Personal canvass has been made. A bonus system has been approved, and a number of scrub bulls have been disposed of. The work in Perth county appears to be in a satisfactory condition, and the results of this last seasons' work should be apparent when the season for securing bulls has arrived, which should be the months of March and April.

In other counties the work is getting nicely started.

### Extension Work in Sheep Husbandry.

In the fall of 1920, two Junior Farmer Sheep clubs were formed in Grey county. One club of six members was formed at Markdale, and another club of six members was formed at Dundalk. The selection of the club members was left to the Agricultural representative who has followed the policy of selecting boys from those who had attended a short course under his direction. The copy of the agreement under which these flocks are placed is attached herewith.

The object of these clubs are:—

(1) To demonstrate the value of a pure bred sire of the proper type in grading up a flock and in the production of the highest type of market lambs.

(2) To demonstrate the value of dipping, docking and castrating.

(3) To demonstrate the value of co-operative shipping of lambs.

(4) To demonstrate market requirements and market classes of sheep and lambs.

(5) To use the results secured in this work to advertise and encourage the use of better rams throughout the province and promote better methods in the care and marketing of lambs.

Valuable assistance and co-operation in this work has been given by officials of the sheep division of the Dominion Live Stock Branch.

Results:—Briefly some of the results of this work are as follows:—

(1) There has been a revival of interest in sheep raising in Grey county.

(2) Dipping and castrating have been carried on extensively.

(3) A considerable number of men who had not been using pure bred rams are now using good rams. This is proven by the number of men receiving the Dominion Government bonus which is given to farmers who have purchased their first pure bred rams.

(4) Grey county lambs are now looked upon by buyers at the stock yards as being of superior quality.

In the fall of 1921, three rams clubs were formed, one in Lanark county at Middleville, one in Renfrew, county at Eganville, and one in Lennox and Addington county at Tamworth. These sections are very suitable for sheep raising.

The objects in forming these clubs were similar to those in forming the clubs in Grey county. The chief points of difference are:—

(1) No ewes are supplied the farmers and consequently there is no return of ewes to the department.

(2) The club was formed among sheep raisers who were not using pure bred rams instead of among junior farmers.

Valuable co-operation and assistance was given in the field work by officials of the sheep division in the Dominion Live Stock Branch.

Results:—

(1) That the club owners in Renfrew and Lanark counties have been particularly well pleased with the results of co-operative marketing.

(2) The quality of the rams placed was such as to draw the following comment from many of the farmers present "The best bunch of rams ever brought into the county".

(3) In Lanark county last fall (1922), orders for the purchase of pure bred rams were taken by the Agricultural representative. Rams were purchased by officials of this branch and sent to Lanark county and were very satisfactory to all concerned. A number of these purchasers were men who hitherto had not been using pure bred rams.

(4) Dipping and castrating is being carried on extensively.

## Stallion Enrolment.

The work in connection with stallion enrolment may be divided under the following headings:—

1. Meetings of the Stallion Enrolment Board in order to arrange inspection, pass on inspection reports, and decide on any differences which may arise in connection with inspection, ownership, awarding of premiums, and violations of the Stallion Law. The number of meetings in 1922 were eight, and 651 inspection reports were passed on. There was approximately fourteen prosecutions. Eighty-eight premiums were awarded.

2. Sending out of inspectors and supervision of their work. There have been sent out approximately sixteen different inspectors during the year, and their work has been checked as closely as possible from information and knowledge of horses inspected, and also in comparison with former reports on the horses.

3. The issuing of enrolment certificates; premium certificates; stallion account books; correspondence with stallion owners. Between three and four thousand personal letters are sent out each year to stallion owners, and about five thousand circular letters. Receiving of fees and depositing same with the Treasury Department.

4. Issuing of annual report on enrolled horses. In the following tables is given the number of horses enrolled by years, breeds and counties, also notes regarding inspection, showing the information placed before stallion owners.

SUMMARY OF BREEDS OF STALLIONS ENROLLED FOR THE YEARS 1913-1922.

| Year | Clydesdale | Percheron | Shire | Belgian Draft | French Canadian | Suffolk | Standard Bred | Thoroughbred | Hackney | French Coach | German Coach | Ponies, Morgans and Hunters | Grades | Total Number Horses Enrolled |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1913 | 1,179 | 236 | 69 | 17 | 1 | .... | 156 | 31 | 59 | 7 | 6 | 6 | 993 | 2,760 |
| 1914 | 1,313 | 308 | 73 | 21 | 4 | .... | 232 | 43 | 72 | 5 | 7 | 5 | 1,118 | 3,201 |
| 1915 | 1,331 | 328 | 70 | 22 | 4 | .... | 257 | 46 | 77 | 7 | 6 | 7 | 1,022 | 3,177 |
| 1916 | 1,125 | 320 | 47 | 15 | 5 | 4 | 270 | 36 | 63 | 7 | 7 | 6 | 826 | 2,731 |
| 1917 | 1,038 | 299 | 42 | 19 | 4 | 3 | 280 | 31 | 60 | 6 | 7 | 4 | 640 | 2,433 |
| 1918 | 885 | 262 | 33 | 11 | 7 | 3 | 248 | 25 | 49 | 3 | 5 | 4 | 458 | 1,993 |
| 1919 | 976 | 326 | 32 | 21 | 6 | 3 | 286 | 19 | 47 | 2 | 6 | 5 | ..... | 1,729 |
| 1920 | 930 | 353 | 32 | 22 | 11 | 4 | 240 | 16 | 36 | 2 | 8 | 5 | ..... | 1,659 |
| 1921 | 845 | 347 | 23 | 26 | 9 | 2 | 200 | 14 | 34 | 1 | 7 | 3 | ..... | 1,511 |
| 1922 | 770 | 368 | 20 | 25 | 8 | 2 | 193 | 18 | 35 | 0 | 4 | 4 | ..... | 1,447 |

SUMMARY OF ENROLLED HORSES FOR THE YEARS 1913-1922.

| County. | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|---|---|---|---|---|
| Brant | 28 | 44 | 43 | 35 | 41 | 27 | 14 | 17 | 12 | 15 |
| Bruce | 103 | 114 | 99 | 91 | 95 | 93 | 76 | 76 | 68 | 62 |
| Carleton | 65 | 76 | 70 | 54 | 60 | 52 | 51 | 42 | 42 | 45 |
| Dufferin | 51 | 58 | 57 | 51 | 48 | 46 | 48 | 42 | 35 | 32 |
| Dundas | 44 | 41 | 43 | 38 | 29 | 16 | 13 | 14 | 17 | 21 |
| Durham | 60 | 63 | 67 | 52 | 43 | 42 | 37 | 34 | 39 | 31 |
| Elgin | 65 | 75 | 76 | 46 | 50 | 36 | 36 | 23 | 23 | 19 |
| Essex | 69 | 91 | 94 | 76 | 61 | 40 | 29 | 32 | 29 | 31 |
| Frontenac | 31 | 42 | 42 | 38 | 35 | 23 | 16 | 16 | 14 | 13 |
| Glengarry | 34 | 48 | 54 | 48 | 43 | 29 | 27 | 22 | 17 | 15 |
| Grenville | 37 | 32 | 28 | 21 | 21 | 20 | 14 | 13 | 12 | 12 |
| Grey | 108 | 121 | 118 | 94 | 87 | 79 | 67 | 73 | 67 | 64 |
| Haldimand | 47 | 50 | 54 | 50 | 38 | 32 | 32 | 26 | 30 | 24 |
| Halton | 27 | 29 | 25 | 32 | 30 | 23 | 15 | 16 | 10 | 10 |
| Hastings | 82 | 87 | 72 | 65 | 59 | 50 | 32 | 30 | 26 | 31 |
| Huron | 112 | 142 | 130 | 123 | 114 | 99 | 83 | 90 | 91 | 66 |
| Kent | 130 | 136 | 133 | 122 | 89 | 69 | 61 | 52 | 56 | 51 |
| Lambton | 113 | 134 | 126 | 108 | 88 | 71 | 71 | 71 | 53 | 61 |
| Lanark | 58 | 76 | 71 | 61 | 56 | 44 | 42 | 32 | 25 | 27 |
| Leeds | 50 | 52 | 40 | 25 | 25 | 19 | 21 | 16 | 13 | 10 |
| Lennox and Addington | 45 | 42 | 33 | 29 | 29 | 24 | 13 | 10 | 12 | 12 |
| Lincoln | 27 | 33 | 31 | 15 | 16 | 16 | 10 | 17 | 12 | 8 |
| Middlesex | 128 | 158 | 154 | 142 | 112 | 73 | 68 | 78 | 66 | 62 |
| Norfolk | 57 | 60 | 53 | 40 | 39 | 24 | 22 | 20 | 18 | 19 |
| Northumberland | 50 | 51 | 48 | 53 | 43 | 28 | 31 | 34 | 29 | 26 |
| Ontario | 101 | 108 | 124 | 96 | 95 | 80 | 77 | 69 | 63 | 59 |
| Oxford | 77 | 86 | 90 | 77 | 57 | 36 | 35 | 36 | 36 | 26 |
| Peel | 52 | 72 | 70 | 65 | 47 | 46 | 42 | 37 | 36 | 35 |
| Perth | 81 | 102 | 105 | 86 | 67 | 71 | 74 | 73 | 53 | 56 |
| Peterboro | 46 | 46 | 52 | 44 | 50 | 32 | 34 | 32 | 35 | 40 |
| Prescott | 46 | 57 | 42 | 37 | 27 | 20 | 8 | 13 | 11 | 8 |
| Prince Edward | 29 | 27 | 36 | 26 | 28 | 19 | 15 | 14 | 16 | 12 |
| Renfrew | 85 | 91 | 78 | 55 | 62 | 53 | 45 | 37 | 37 | 36 |
| Russell | 39 | 52 | 38 | 33 | 34 | 26 | 18 | 18 | 14 | 16 |
| Simcoe | 139 | 157 | 145 | 120 | 100 | 82 | 74 | 70 | 66 | 59 |
| Stormont | 32 | 35 | 27 | 23 | 23 | 20 | 11 | 12 | 12 | 8 |
| Victoria | 48 | 66 | 62 | 70 | 68 | 53 | 37 | 36 | 36 | 34 |
| Waterloo | 48 | 59 | 54 | 47 | 45 | 43 | 44 | 41 | 35 | 35 |
| Welland | 17 | 28 | 28 | 26 | 22 | 14 | 12 | 12 | 7 | 7 |
| Wellington | 104 | 117 | 115 | 87 | 82 | 68 | 58 | 58 | 57 | 58 |
| Wentworth | 50 | 60 | 56 | 35 | 30 | 22 | 18 | 21 | 14 | 14 |
| York | 119 | 148 | 157 | 135 | 121 | 101 | 110 | 99 | 77 | 94 |
| New Ontario | 12 | 16 | 120 | 129 | 110 | 127 | 73 | 78 | 77 | 71 |
| Outside points | 14 | 19 | 17 | 21 | 14 | 5 | 15 | 7 | 13 | 12 |
| Totals | 2,760 | 3,201 | 3,177 | 2,731 | 2,433 | 1,993 | 1,729 | 1,659 | 1,511 | 1,447 |
| Percentage of Grades | 36 | 34½ | 32 | 30 | 26 | 23 | 0 | 0 | 0 | 0 |

SUMMARY FOR THE PROVINCE OF ONTARIO SHOWING BY COUNTIES THE NUMBER OF DIFFERENT BREEDS OF STALLIONS ENROLLED DURING 1922.

| County | Clydesdale | Percheron | Shire | Belgian Draft | French Canadian | Suffolk | Standard Bred | Thoroughbred | Hackney | French Coach | German Coach | Ponies, Morgans and Hunters | Total Horses Enrolled |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brant | 1 | 7 | .... | 4 | .... | 1 | 1 | .... | 1 | .... | .... | .... | 15 |
| Bruce | 39 | 11 | .... | .... | 2 | .... | 8 | .... | 1 | .... | .... | 1 | 62 |
| Carleton | 25 | 8 | .... | 4 | .... | .... | 5 | 1 | 2 | .... | .... | .... | 45 |
| Dufferin | 26 | 2 | .... | .... | .... | .... | 4 | .... | .... | .... | .... | .... | 32 |
| Dundas | 9 | 7 | .... | .... | .... | .... | 4 | .... | 1 | .... | .... | .... | 21 |
| Durham | 21 | 4 | 1 | 1 | .... | .... | 2 | .... | 2 | .... | .... | .... | 31 |
| Elgin | 4 | 11 | 3 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 19 |
| Essex | 8 | 18 | .... | 2 | .... | .... | 3 | .... | .... | .... | .... | .... | 31 |
| Frontenac | 2 | 5 | 1 | .... | 1 | .... | 4 | .... | .... | .... | .... | .... | 13 |
| Glengarry | 8 | 2 | .... | .... | .... | .... | 2 | .... | 3 | .... | .... | .... | 15 |
| Grenville | 5 | 1 | .... | .... | .... | .... | 5 | .... | 1 | .... | .... | .... | 12 |
| Grey | 45 | 6 | 1 | 1 | .... | .... | 9 | .... | 2 | .... | .... | .... | 64 |
| Haldimand | 16 | 5 | .... | 1 | .... | .... | 1 | .... | 1 | .... | .... | .... | 24 |
| Halton | 3 | 6 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 10 |
| Hastings | 11 | 9 | .... | .... | .... | .... | 10 | .... | .... | .... | 1 | .... | 31 |
| Huron | 40 | 11 | .... | 2 | .... | .... | 13 | .... | .... | .... | .... | .... | 66 |
| Kent | 16 | 23 | 5 | 2 | .... | .... | 5 | .... | .... | .... | .... | .... | 51 |
| Lambton | 37 | 15 | 1 | .... | .... | .... | 6 | .... | 2 | .... | .... | .... | 61 |
| Lanark | 15 | 6 | 1 | 1 | .... | .... | 3 | .... | 1 | .... | .... | .... | 27 |
| Leeds | 3 | 3 | .... | .... | .... | .... | 3 | .... | 1 | .... | .... | .... | 10 |
| Lennox and Addington | 6 | 4 | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | 12 |
| Lincoln | 2 | 2 | .... | .... | .... | .... | 4 | .... | .... | .... | .... | .... | 8 |
| Middlesex | 4 | 23 | .... | 2 | .... | .... | 11 | 1 | .... | .... | .... | 1 | 62 |
| Norfolk | 3 | 15 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 19 |
| Northumberland | 0 | 9 | .... | .... | .... | 1 | 4 | 2 | .... | .... | .... | .... | 26 |
| Ontario | 9 | 8 | .... | .... | .... | .... | .... | .... | 2 | .... | .... | .... | 59 |
| Oxford | 13 | 5 | .... | .... | .... | .... | 5 | 1 | 1 | .... | 1 | .... | 26 |
| Peel | 25 | 3 | 1 | .... | .... | .... | 3 | 2 | 1 | .... | .... | .... | 35 |
| Perth | 37 | 4 | .... | .... | .... | .... | 15 | .... | .... | .... | .... | .... | 56 |
| Peterboro | 21 | 12 | .... | .... | .... | .... | 4 | .... | 3 | .... | .... | .... | 40 |
| Prescott | 3 | 4 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 8 |
| Prince Edward | 1 | 7 | .... | .... | .... | .... | 2 | .... | 1 | .... | .... | 1 | 12 |
| Renfrew | 19 | 8 | 1 | 2 | 1 | .... | 4 | .... | 1 | .... | .... | .... | 36 |
| Russell | 8 | 4 | .... | .... | 2 | .... | 1 | .... | .... | .... | 1 | .... | 16 |
| Simcoe | 34 | 16 | 2 | .... | .... | .... | 6 | .... | 1 | .... | .... | .... | 59 |
| Stormont | 3 | 2 | 1 | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | 8 |
| Victoria | 29 | 3 | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | 34 |
| Waterloo | 14 | 12 | .... | 1 | .... | .... | 7 | .... | 1 | .... | .... | .... | 35 |
| Welland | 3 | 1 | .... | 1 | .... | .... | 2 | .... | .... | .... | .... | .... | 7 |
| Wellington | 42 | 10 | .... | .... | .... | .... | 6 | .... | .... | .... | .... | .... | 58 |
| Wentworth | 3 | 5 | .... | .... | 1 | .... | 4 | 1 | .... | .... | .... | .... | 14 |
| York | 47 | 19 | 1 | 1 | .... | .... | 12 | 10 | 4 | .... | .... | .... | 94 |
| New Ontario | 34 | 28 | 1 | .... | 1 | .... | 6 | .... | 1 | .... | .... | .... | 71 |
| Outside points | 6 | 4 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | 12 |
| | 770 | 368 | 20 | 25 | 8 | 2 | 193 | 18 | 35 | 0 | 4 | 4 | 1,447 |

## CO-OPERATIVE CAR SHIPMENTS OF LIVE STOCK.

Below is given the shipments for the years 1908 to 1922 inclusive:

| Year. | Horses. | Cattle. | Sheep. | Swine. | Total. |
|---|---|---|---|---|---|
| 1908 | 22 | 74 | 14 | 15 | 125 |
| 1909 | 25 | 70 | 84 | 4 | 183 |
| 1910 | 39 | 51 | 36 | 7 | 133 |
| 1911 | 58 | 51 | 51 | 18 | 178 |
| 1912 | 51 | 45 | 24 | 20 | 140 |
| 1913 | 47 | 71 | 107 | 21 | 246 |
| 1914 | 49 | 97 | 34 | 20 | 200 |
| 1915 | 28 | 104 | 76 | 8 | 216 |
| 1916 | 59 | 185 | 100 | 22 | 366 |
| 1917 | 70 | 269 | 196 | 15 | 550 |
| 1918 | 67 | 250 | 180 | 4 | 501 |
| 1919 | 24 | 154 | 154 | 4 | 336 |
| 1920 | 18 | 110 | 37 | 6 | 171 |
| 1921 | 1 | 36 | 21 | 5 | 63 |
| 1922 | 3 | 18 | 6 | 21 | 48 |

It will be noticed that the co-operative shipments of live stock to Western Canada have been declining since 1918. This would appear to be caused by the decline in prices of farm products since the war with the corresponding reduction in buying power of the farmers in the western provinces, together with the big increase in freight rates which has been maintained.

Improvement in this trade is indicated by the fact that at the present time we have nearly enough applications for space, as to warrant the sending of two cars in February of this year.

## GRANTS TO ASSOCIATIONS HOLDING SALES OF PURE-BRED STOCK.

| | |
|---|---|
| Belleville District Holstein-Friesian Club | $100 00 |
| *Brantford District Holstein-Friesian Club | 100 00 |
| *Bruce County Stock Breeders' Club. (Shorthorn.) | 87 00 |
| Caledonia Shorthorn Breeders' Club | 100 00 |
| Carleton County Shorthorn Breeders' Club | 39 00 |
| Cobourg District Holstein-Friesian Club | 84 00 |
| Dual-Purpose Shorthorn Association | 100 00 |
| *Durham County Shorthorn Association | 84 00 |
| *Durham County Holstein-Friesian Club | 100 00 |
| Elgin Shorthorn Breeders' Association | 100 00 |
| Elgin County Pure-Bred Holstein-Friesian Club | 100 00 |
| *Grenville County Holstein-Friesian Club | 81 00 |
| *Grey County Shorthorn Breeders' Club | 75 00 |
| Guelph Fat Stock Club. (Shorthorns.) | 100 00 |
| *Huron County Live Stock Association. (Shorthorns.) | 100 00 |
| *Lambton County Live Stock Breeders' Association. (Shorthorn.) | 100 00 |
| London District Pure-Bred Holstein Breeders' Association | 100 00 |
| Norfolk Holstein-Friesian Breeders' Club | 100 00 |
| *North Ontario Shorthorn Breeders' Club | 51 00 |
| Ontario Aberdeen-Angus Association | 100 00 |
| Ontario Hereford Breeders' Association | 100 00 |
| Oxford Holstein Breeders' Club | 100 00 |
| *Peninsular Pure Bred Live Stock Association. (Shorthorn and Angus.) | 100 00 |
| *Peel County Shorthorn Breeders' Club | 84 00 |
| *Perth District Holstein Breeders' Club | 100 00 |
| *Peterborough County Shorthorn Breeders' Association | 100 00 |
| Prince Edward County Live Stock Breeders' Association. (Holstein.) | 93 00 |
| Russell County Holstein Breeders' Club | 100 00 |
| *South Bruce Stock Breeders' Club. (Shorthorn.) | 51 00 |
| *South Ontario Shorthorn Breeders' Club | 69 00 |
| *Victoria County Hereford Breeders' Association | 100 00 |

| | |
|---|---|
| *Victoria County Pure Bred Stock Association. (Shorthorn.) | 100 00 |
| *Waterloo County Holstein Breeders' Club | 99 00 |
| Wellington County Shorthorn Breeders' Club | 100 00 |
| *York County Shorthorn Breeders' Club | 99 00 |
| Number of Associations paid grants during the fiscal year, November 1st, 1921, to October 31st, 1922 | 35 |

Payment of grant is reckoned on the basis of $3.00 per animal sold, but the total grant does not exceed $100.00.

*Note.*—Those marked with a star have had inspection through this Branch.

The live stock branch, whenever asked, furnish expert men to inspect cattle offered for sale. The Inspector tries to show the breeder the proper type of animal required, and to encourage the placing of only high class animals in the sale.

## LOCAL POULTRY ASSOCIATIONS.

| | |
|---|---|
| Number of grants paid to Poultry Associations during the fiscal year of November 1st, 1921, to October 31st, 1922 | 65 |
| Amount of grant paid to each Association | $50 00 |
| Total grants paid | $3,250 00 |
| Number of judges supplied to Poultry Associations | 99 |
| Number of lecturers and demonstrators supplied to Poultry Associations | 20 |

Supplying of judges and demonstrators, and arranging of dates was done through the office of the live stock branch. Wherever possible we try and secure a report from the judges in order that we may know how well the work is being carried on by the local associations.

In 1922, a conference of representatives of the various local poultry associations was held at Guelph, and at this conference reports were received, discussions took place on local poultry work, and various problems confronting the improvement of poultry throughout the province were discussed.

The holding of an annual conference of these representatives we believe, quickens the activities of the local associations, and from reports received at the annual conference we are led to believe that the local association is becoming a stronger factor in the development of the poultry industry generally.

## GRANTS TO HORSE SHOWS.

| | |
|---|---|
| Bright Spring Horse Show | $50 00 |
| Cobourg Horse Show | 600 00 |
| Drayton Spring Horse Show | 50 00 |
| Drayton Horse Show | 50 00 |
| Elora Spring Horse Show | 53 75 |
| Huron County Horse Show | 64 75 |
| Huron County Horse Show | 88 00 |
| Linwood Horse Show | 50 00 |
| New Hamburg Spring Horse Show | 50 00 |
| Toronto Open Air Horse Show | 300 00 |
| Number of Associations paid grants during the fiscal year of November 1st, 1921, to October 31st, 1922 | 10 |

## INSTITUTES BRANCH

While the service to the farmers of the province is more effective than ever before through the various branches of the Department of Agriculture, the number of meetings to which this branch is asked to furnish instructors has gradually decreased during recent years. A few of the counties, however, continue to ask for series of meetings at which general practices in agriculture are dealt with by addresses and discussions. Nearly all these meetings are planned for through the co-operation of the Boards of Agriculture and the women's institutes, separate sessions being held in the afternoon, and joint meetings in the evening. During the past year such meetings were held at seventy-eight centres.

In addition to this service, the institutes branch has furnished speakers and live stock judges for a number of special meetings for the consideration of a variety of problems. There is an increasing interest in quality in all lines of production and a very keen desire to know more of the possibilities in the co-operative marketing of farm products.

### WOMEN'S INSTITUTES.

The strength of the women's institutes, which were first established twenty-five years ago, lies in the fact that localities desiring service in the way of lectures, literature and demonstrations, are advised to form organizations and are required to hold meetings, utilizing local talent. While the service rendered by the institutes branch has been of real value and much appreciated, the activities of the women and girls in the local organizations has resulted in gaining much knowledge of practical value in the housing, clothing and feeding of the family, the introduction of practices making towards health and strength of body and mind, ability to grapple with social, educational and economic problems through the co-operation of the whole people in the best interests of the community.

It has been demonstrated in the work of the women's institutes of the province for the past twenty years, that the value of the service rendered is dependent to a very large extent upon the degree to which the people directly concerned can be induced to put forth effort on their own behalf. For the Government or any organization outside of the community to undertake to perform service for the people without requiring activity and the shouldering of responsibility on their part, is not conducive to the best development of the people concerned, and does not result in a service of lasting worth.

This branch is endeavoring to render a valuable service in literature, lectures and short courses, and is a medium through which the local organizations are linked up with the services available through other departments of the Government and voluntary organizations. The women of Ontario have come to realize that they have a power for service of real worth in community and nation building, and are intelligently co-operating with men in bringing about many needed improvements and advantages which have been wanting in most rural districts.

The past year has been one of steady growth and marked progress. The fact that the number of branches has increased from 930 to nearly 1,000 during the year, with a corresponding increase in membership, and that at the five conventions held at Fort Frances, North Bay, Ottawa, London and Toronto, the attendance was considerably larger than in previous years, is evidence of the development of the organization. A matter of perhaps greater importance

is the way in which the individual institutes, in their own communities are undertaking and carrying through work of the most practical benefit to the people.

The institutes are working more and more actively than ever to improve the public schools, particularly in the rural districts where there is no other "school and home organization". A number of branches have installed sanitary drinking fountains, one branch in Northern Ontario where the water supply for schools or homes is a real problem, paid fifty dollars to have a well dug at the school and are proud of having struck flowing water. Others have had the school cleaned and redecorated, supplied wash basins and paper towels, and in general improved the sanitary condition of the school and surroundings. Proper seats to suit the needs of growing children, better heating and lighting systems have been put into several schools through the influence of the institutes, and sometimes through their financial assistance, while it is a common feature of institute work to present the school with such things as library books, first aid kits, playground equipment, historical pictures or prints of classic paintings, gramophones, pianos, weighing scales, screens to keep out flies, and hot lunch equipment. One institute on Manitoulin Island has furnished the three schools in the district with complete hot lunch equipment, and a number of institutes are assisting in supplying cocoa, sugar, milk and vegetables and other foods to be used for the hot lunch.

The institutes continue to assist in the work of medical school inspection whenever they can be of service to the visiting doctor and nurse, and in several counties the institutes are assisting in the support of a permanent school nurse. They are also in many places giving generous donations to the school fair work carried on under the direction of the agricultural representative, have provided for the judging of school plots, and assisted personally in judging the household exhibits. One institute has organized a class to train the school girls in sewing for their school fair exhibits. A few institutes have been instrumental in having music, household science and manual training taught in their schools, and a number have been responsible for having continuation schools opened in rural communities. There is a case on record where a number of children in a farming section were ready for high school but would never have an opportunity for further education unless the public school opened a continuation class, and the school had no funds available this year. The trustees appealed to the women's institute, and they responded with a few hundred dollars to make up the additional teacher's salary.

Obviously one of the important features of these varied projects for school improvement is their influence to arouse in the whole community a sense of responsibility in the school.

Since the passing of the Community Halls Act, the Women's Institutes have been active in raising money to build community halls or to renovate old halls to meet the standards required by the Act. One institute in Northern Ontario was successful in remodelling an old cheese factory to meet all the necessary requirements. It is also of interest, that the institute at Spry, in the Bruce Peninsula, twenty miles from a railway, has secured a ninety-nine year lease of the Orange Hall, and rebuilt it to make it a comfortable gathering place. Where the institutes have not contributed to the actual building of the hall, they have, in a great many communities, donated such accessories as a piano or kitchen equipment. In many places the institute is represented on the Board in supervision of the type of recreation carried on after the hall is established. One institute in Simcoe county has been given sole charge of the

programme of entertaining, with the responsibility of seeing that all young people's gatherings are properly chaperoned.

Other community enterprises common to institute work, are the establishing of memorial parks and athletic grounds, tennis courts for the young people in rural districts, and rest rooms in country towns, for the use of women coming in from the country to do their shopping. The institutes also bring valuable entertainment and education to the community in the way of concerts by local talent, and outside speakers and entertainers. University extension courses are becoming very popular. A few institutes have brought in Chautauqua courses, and the number of requests for speakers furnished by the department shows a marked increase this year. Several institutes have purchased moving picture machines on the plan of instalment payments arranged by the Government and are making use of Government films. Other community ventures sponsored by the institutes are the inauguration of a "clean-up week", a county campaign for home beautification, an appeal to the council to have certain public nuisances or dangers removed, such as in one case, the draining of a ditch which was breeding mosquitoes to the great annoyance of the congregation of a neighbouring church.

The improving or establishing of libraries is a favorite line of work with the institutes. One institute last year gave $800 toward renovating an old house into an attractive library building with an assembly room for meetings and two reading rooms. On Saturday afternoons they hold a story hour in the library for the children of the neighbourhood. They have given a generous grant towards buying new books, and have brought in two travelling libraries. One institute established one of the best libraries in the province as a memorial to their fallen soldiers. Others have taken over neglected libraries, or given donations of money to the Library Board, to buy new books.

Travelling libraries, brought in by the institutes, are becoming a blessing to many communities, especially in the northern and more isolated sections of the province. As the express charges on these libraries becomes rather heavy as they go farther north to the newer sections of the province where they are most needed, a plan is under way to have the express charges made equitable throughout the province.

In many rural sections of Ontario the institute is responsible for changing neglected cemeteries into places of beauty and order. Sometimes they have made a community bee to do the first work of levelling and clearing the ground, after which they have hired a caretaker, either raising the funds themselves or appointing a committee to get annual subscriptions from the plot-owners. It is rather interesting, that one neighbourhood in Algoma has appointed as its permanent Cemetery Board, the reeve of the township, whoever he may be, the Anglican minister, because the rectory is close to the cemetery, and the president of the Women's Institutes.

The institutes are doing much to create a neighbourly community spirit, by their quick response to local need or trouble. One institute in Northern Ontario keeps in readiness a complete infant's layette and an outfit of bed linen in case of need in a poor family. Other institutes have done the sewing for families of motherless children, paid the hospital expenses of a needy patient in the community, re-equipped homes when a family had been burned out, made quilts for a poor family in the section, given donations of eggs, butter, home canned fruit, etc., to children's shelters and old people's homes, while their response to the call for Northern Fire Relief has been generous almost beyond belief.

NUMBER AND CHARACTER OF COURSES.

| | Number of Courses. | Number in Classes. |
|---|---|---|
| Food Values and Cooking | 42 | 1,845 |
| Home Nursing and First Aid | 66 | 2,918 |
| Sewing | 72 | 1,075 |
| Labour-saving Devices, etc | 9 | 331 |
| | 189 | 6,169 |

Plans have been made for the holding of seventy courses during January and February, 1923. In addition to the regular demonstration-lecture courses, this branch furnished instructors for four three months' courses held under the supervision of the Agricultural Representatives. The length of instruction in each line was one month instead of two weeks. This feature of the Three Months' Short Course activities proved very effective, and plans have been completed for furnishing instructors in Home Nursing and First Aid and Sewing, at eight centres during the months of December, January and February. This branch is providing resident instructors in Food Values and Cooking, who will be in charge of the girls' work at the centres for the three months. The appreciation of the longer course will we hope result in the establishment of regular schools in a number of centres.

While instruction of real value is confined largely to the Demonstration-Lecture Courses, nearly every branch is furnished with a speaker, usually during the summer series, to discuss ways and means of making the work of the institutes most effective. 676 such meetings were held during the past year.

Conventions were held at five points:—

Fort Frances—October 11th and 12th.
North Bay—October 18th and 19th.
Ottawa—October 24th, 25th and 26th.
London—November 7th, 8th and 9th.
Toronto—November 21st, 22nd and 23rd.

At these conventions the delegates from the territory covered had an opportunity of discussing the problems peculiar to their own districts, exchanging information and views as to effective methods of carrying on the work and formulating plans for future activities.

## Girls' Work.

There are now about sixty girls' institutes in the province, specializing in the study of various lines of home craft and in arranging wholesome forms of community recreation and education. The girls' institutes usually co-operate closely with the women's institutes in their regular work, and with the Junior Farmers Association in their social activities to the benefit of the whole community.

## Departmental Service.

It has been the custom for a number of years to furnish lecturers for single meetings, but most centres are desirous now of getting systematic instruction along lines of worth to women and girls of responsibility, hence the popularity of the Demonstration-Lecture Courses, which consist of two weeks' instruction in one of the following lines: "Home Nursing and First Aid", "Food Values and Cooking", or "Sewing".

At the courses in "Food Values and Cooking" the members of the class are provided with leaflets for each of the lessons which cover the following

grounds: Vegetables and methods of cooking; Fruit: canning of vegetables, fruits and meats; Milk—soups, puddings and combinations, with special relation in infant, children's and invalid diet; Cereals and cheese; Meat, meat substitutes, fish, eggs, legumes; Breads, biscuits, etc., Simple desserts, salads.

The course in "Home Nursing and First Aid" includes the following:

The human body and its structure; what we mean by sickness and accident, Sick Room,—how to take temperature, pulse, respiration, record keeping for the doctor, bed making for the various forms of sickness, the bath, hot and cold packs, emergencies, hot and cold applications, bandaging, contagious and infectious diseases, the administration of food and medicine, baby hygiene.

The course in "Sewing" includes the following:—

Measurements; amount and kind of material to purchase; plain and fancy stitches, including button-holes and eyelet, cutting material, drafting patterns, machine finishing.

## DAIRY BRANCH

The following records of our Dairy industry are of interest and significance:

| | 1920. | 1921. | 1922 (est.). |
|---|---|---|---|
| CHEESE,— | | | |
| Pounds | 92,784,757 | 103,432,696 | 92,500,000 |
| Average price, per lb | 26½c. | 18c. | 16½c. |
| Value | $24,605,823 | 18,676,380 | 15,262,000 |
| BUTTER,— | | | |
| Pounds | 37,234,998 | 43,471,532 | 51,000,000 |
| Average price, per lb | 57 1-3c. | 38½c. | 34c. |
| Value | $21,343,858 | 16,680,247 | 17,340,000 |

It will be noted from the above that the output of Ontario cheese factories has decreased by about 10% during the past year, while the amount of butter manufactured in our creameries has increased by 17%. The value of creamery butter was greater than the value of cheese for the first time in the history of Ontario dairying. We must not conclude that Ontario's dairy industry is declining because of the slight decrease in the output of cheese. The total volume of milk and cream utilized in making cheese, creamery butter, farm dairy butter, condensed milk, powdered milk, and ice cream, as well as the large quantity used on the farms, and delivered to the towns and cities for human consumption is increasing from year to year. While there are no definite records of the volume of dairy goods produced from year to year beyond the factory output, it would appear that there has been a slight increase in the production of milk and cream during recent years. Notwithstanding the slight increase in volume, the *value* of our dairy output in the past three years has declined from $105,500,000 in 1920 to $71,500,000 in 1921; while 1922 will register a value of approximately $66,000,000.

These figures include the estimated value of the milk used for human consumption and the amount used in making condensed and powdered milk.

### DAIRY STATISTICS FOR 1922.

The record of factory output for 1922 is based upon definite returns for six months of the year and a conservative estimate for the balance of the year.

CHEESE FACTORIES.

| | Factories. | Patrons. | Lbs. Cheese. |
|---|---|---|---|
| Western Ontario | 116 | 7,126 | 18,500,000 |
| Eastern Ontario | 729 | 24,078 | 74,000,000 |
| Total | 845 | 31,204 | 92,500,000 |
| Value at 16½c. | $15,262,000. | | |
| Shrinkage of about 10%. | | | |

CREAMERIES.

| | Creameries. | Patrons. | Lbs. Butter. |
|---|---|---|---|
| Western Ontario | 155 | 55,982 | 37,000,000 |
| Eastern Ontario | 57 | 17,330 | 14,000,000 |
| Total | 212 | 73,312 | 51,000,000 |
| Value at 34c. | $17,340,000. | | |
| Increase, 17%. | | | |

| | |
|---|---|
| Average Income for Cheese Factory patrons | $489 10 |
| Average Income for Creamery patrons | 236 52 |
| General Average of 104,516 patrons | 311 98 |

With an annual output of $66,000,000, an investment of $17,500,000 in manufacturing plants, with farm lands, buildings, equipment and stock on 104,500 farms supplying milk to our factories besides the large number who are furnishing milk and cream for human consumption, the importance of the dairy industry cannot be overestimated.

With so much at stake in an industry of such great importance, not only to farming communities, but to the whole nation, it is essential that the industry be organized on a sound business basis. The need for effective action on the part of the producers of milk and cream was never so great as at the present time, and the possibilities for placing the dairy industry of Ontario in a commanding position, both in the foreign and domestic market, are well within the reach of the tillers of the soil in this fair province. All that is needed is a get-together determination.

## Quality of Cheese and Butter.

While the average quality of Ontario cheese has been maintained or improved, the average quality of Ontario butter has not shown the desired improvement, although a small percentage of the output was superior to any previous year. The manufacturers of creamery butter have, until about two years ago, been able to market practically all their output in the home market. A great deal of this butter entered into immediate consumption, and even though it did not possess good keeping qualities, commanded a good price. The producers and manufacturers are coming to appreciate the importance of increasing the percentage of high quality goods with the necessary keeping qualities, for Ontario must look to outside markets for the sale of a part of her goods, and in fact will required to raise the general standard of the output in order to regain her home markets.

It is recognized on all hands that in order to secure quality in the finished product, the one essential is a better cared for raw material. Appeals have been made to producers for many years to make provision for proper care of the milk and cream produced; the response in some quarters has been quite satisfactory, but failure to receive remuneration on the basis of the quality of the raw material produced has discouraged the farmer in incurring additional expense and putting additional labour on the production of high class raw material. Generally speaking, the price has been the same to the man who took good care of the raw material and the one who was careless in his methods.

It is generally admitted that as far as the methods of manufacture in our creameries and the great majority of our cheese factories are concerned, little is to be desired. With a high class raw material, the butter makers and the great majority of cheese makers can insure a high class finished product. So it would appear that an efficient method of marketing, which always results in quality being recognized in dollars and cents, is the essential at this stage of the development of our dairy industry.

During the past year the staff of dairy instructors and inspectors was considerably increased in order that the regular work of instruction could be carried out efficiently, and the service of the instructors also made available to do the testing under the Dairy Standard Act, as well as to encourage the carrying on of cow testing work with a view to weeding out the herds. The staff consisted of:—

Two chief instructors.
Thirty-four cheese factory instructors.

Four creamery instructors.
Four butter grading staff.
Six inspectors under the Cream and Milk Purchase Act.

During the winter of 1921-22, speakers, mostly instructors, were furnished for 230 annual and district meetings at cheese factories and creameries. At most of the cheese factory meetings, the plans for administrating the Dairy Standards Act were outlined, and the requirements for the production of high class goods were considered. At many of these meetings, advice was given as to additional equipment and alterations in creameries and factories.

### The Cream and Milk Purchase Act.

The administration of this Act has been a process of education rather than prosecution. While it has been found necessary to prosecute in a few instances, the great improvement in methods followed and care taken in testing milk and cream has resulted from educational effort. When the Act was first introduced in 1920, there was great lack of knowledge on the part of those doing the testing as to standard methods. The administration of the Act has insured justice in the testing of the cream and milk where lack of knowledge and carelessness had characterized the work previously.

The inspectors checked up the testing done in the creameries, cream gathering stations, condensaries, milk powder plants, cheese factories, and a few large milk distributing plants.

During the season regular visits were made by our inspector for the purpose of checking the tests made by the employees at 212 creameries, 270 cream buying stations, the cheese factories at which the dairy instructors did not do the testing, condensaries, and other plants at which milk and cream were purchased on the basis of butter fat content. Where discrepancies were found, thorough investigation was made and legal action was taken in several cases.

11,200 check tests were made in creameries, condensaries, milk powder factories, and other dairy manufactories, in addition to 1,830 check tests made in the cheese factories where the instructors did not do the testing from month to month.

### Dairy Standard Act.

This Act which provides that payment for milk and cream used for manufacturing purposes shall be on the basis of the fat content, came into force on the first of January, 1922, and while objections to the Act were registered in a few districts, the first year's operation of the Act has more than justified its introduction. One of the chief objections on the part of the producers was that they had little faith in the accuracy of the test. By offering to furnish well qualified men to do the testing at a uniform charge of 50c. per patron for the year, much of the objection first raised was dispelled. The instructors did the testing in 748 factories, while regular employees did the testing in 97 factories. Many of the producers who at the beginning of the season were opposed to the Act, are now its strongest supporters. Among the results of the Act, we may mention the following:—

(a) Better care of the milk on the part of the producers.

(b) Improved and more uniform quality in the cheese produced.

(c) The adulteration of milk has about disappeared, for the patrons are now paid on the basis of the value of the milk delivered.

(d) An increased yield of cheese per hundred pounds of milk.

(e) The producers generally are beginning to take a keen interest in finding

out the fat content of the milk produced by the individual cow with a view to disposing of the unprofitable cow.

In a number of cases where the milk producers expressed dissatisfaction with the tests made, the farms were visited and the instructors took samples of not only herd milk, but, in many cases, of the individual cow, and made tests in the presence of the owners. This method resulted in the complaints being satisfactorily settled.

We wish to express appreciation to those in charge of factories for the pains shown in taking care of composite samples and in assisting in every way to have the details of the work carried out in accordance with the regulations of the Dairy Standards Act. The staff of dairy instructors took a keen interest in the testing, and evidence of great care was shown in the work which they did as evidenced by the check tests made.

The pasteurization of whey in cheese factories has resulted in almost eliminating yeasty or fruity flavored cheese. The cost of pasteurization is more than justified in the insurance which it gives for quality, and also as a factor in preventing the spread of disease.

## Butter Grading.

There was a substantial increase in the quality of butter graded in Ontario in 1922, over an previous year. Seventy-four creameries sent in samples of churnings—an increase of five, or 7½%. There were 12,586 churnings graded and scores issued. Roughly speaking, this would represent about ten or eleven million pounds of butter, or less than 25% of the total butter manufactured. There was an increase of 3,840 churnings, or 43% more than last year.

The experience of the past year reveals the fact that the average creameryman lacks knowledge as to the desirable flavor cream requires to make high grade butter. The rescoring of the butter placed in storage reveals the fact that butter scoring 39 points for flavor when made, is not safe butter to stand long keeping; while butter scoring 40 points, or over, for flavor when graded, stands up in storage.

Co-operation of the Agricultural College in making bacteriological and chemical tests and the employment of a special man to make Storch tests at the grading station, added to the effectiveness of the grading service, which is being more and more appreciated by the manufacturers and the trade, although the certificates issued are not utilized to the extent desired in merchandising. With the rapid increase in the output of Ontario butter, both the producers, the manufacturers, and the trade will be forced to place greater stress upon quality.

The Dairy School at Kingston was destroyed by fire in January, 1922, and plans were at once made to transfer the students to Guelph, where they completed their course. The department provided for this transfer without the students concerned incurring additional expense on account of transportation. The number of students at Kingston at the time of the fire was forty-two, and twenty-four went to Guelph.

The new Dairy School building at Kingston is nearing completion and will be ready for occupation early in the new year. Increased accommodation and up-to-date equipment are being provided. Plans have been made for Queen's University to provide instructors and research workers from the staff of the University along bacteriological and chemical lines. The dairy interests of Eastern Ontario should be well served by the increased facilities being provided by the new school at Kingston.

## FRUIT BRANCH

For many years, the local associations in Ontario handling apples have been selling individually. During three years just previous to, and during the opening of the war, a number combined with success to buy supplies and sell their output together, but unfortunately the war period with its trade disturbeances brought to an end this first effort for Provincial co-operation.

With the organization of the Niagara district into one selling company in 1921, came a demand for assistance from the apple sections. This department felt that it should be possible for the one company to handle both tender fruits and apples with the one overhead expense, as the season for the marketing of these fruits did not conflict. A conference was accordingly arranged by the department between representatives of the Niagara Peninsula Growers and the local apple shipping associations, at which an agreement was approved of for the season of 1922 as follows:—

NIAGARA PENINSULA GROWERS, LIMITED, PLAN FOR HANDLING APPLES, 1922.

(1) In order to ensure a maximum uniformity of grade, we will prepare specific grading rules to govern the pack. In the preparation of those grades, care will be exercised to ensure a quality of fruit which will be attractive to the trade and at the same time take care of all commercial grades.

(2) This Company will charge for selling service 10 per cent. on the f.o.b. selling price. Payment of all Account Sales will be guaranteed.

(3) Where it is deemed advisable to store for future sale an advance will be made upon request based on the average market price at the time the fruit went into storage; the balance to be paid when the fruit has been sold.

(4) A separate pool will be made for each association, association of growers, or individual grower where an association is not established.

(5) This Company will provide its own inspectors who will examine the lots before shipping, during the heavy movements.

A sufficient number of the local associations and large growers took advantage of this arrangement to give it a trial. With the reorganization of the company, there is a splendid opening for a further extension of this method of selling our apple crop co-operatively.

THE IMPERIAL FRUIT SHOW.

"Go and Grow in Ontario."

ONTARIO PRIZE APPLES.

At the "Daily Mail" Imperial Fruit Show, held at the Crystal Palace, October, 1921, Apples from Ontario, Canada, won the following Prizes:

£100 Challenge Cup.
4 First Prize Gold Medals.
5 Second Prize Silver Medals.
1 Third Prize Bronze Medal.

Also Cash Prizes to the aggregate value of £75.

At the same Show, October-November, 1922, Ontario Apples won the following prizes:—

11 First Prizes.
9 Second Prizes.
1 Third Prize.

Also Cash Awards to the amount of £74.

For further information concerning Ontario, write to the ONTARIO GOVERNMENT OFFICE, 163, Strand, LONDON, W.C. 2.

The above is a copy of a dodger distributed at this great exibition, London, England. It shows up very clearly the success which followed the department's efforts to advertise Ontario fruits in Great Britain.

Working in conjunction with the Ontario Fruit Growers' Association, the Fruit Branch assembled and shipped over to London for competition some 230 cases of apples of the following varieties: Snow, McIntosh, Wagener, Golden Russet, Stark, Greening, Cox Orange, Jonathan, Newtown, Spy, Blenheim, King, Wealthy and Spitzenburg. The prize list called for fourteen varieties, six boxes of each and two entries were made in each class, except Cox Orange, Newtown and any other variety. As shown above, this province won in the fourteen classes, eleven gold, nine silver and one bronze medals. No challenge cup was open to competition for the dominions this year as in 1921.

In addition to the fruit shown in competion, the province made a splendid display of apples and pears, for which purpose the Fruit Branch dispatched an extra seventy cases of pears and apples. A carload (600 cases) was also forwarded by freight to be sold at the show and from the office in the Strand. These consisted of Wealthies which was the only dessert apple that could be secured so early in the season.

The Canadian Fruit Trade Commissioner reports as follows on the value of this show to the Canadian and particularly this year, the Ontario trade.

"Hampered as Canadian exhibitors are by distance, the very considerable expense of transportation, and above all by the early date of the show, which seriously limited the range of selection of all but the earliest varieties, and rendered impossible anything like general participation. the entries from Canada were few as compared with those of their English competitors. The quality, however, was all that could be desired, the sum total of the effect produced by the unbroken array of attractive colour being such as to elicit innumerable expressions of admiration from the visiting public, and to convince all who saw them of the superiority of the Canadian product in all that constitutes commercial value.

GOVERNMENT AND TRADE STANDS.

"The Canadian section lost considerably in effectiveness by the absence of the Federal Government exhibit. which last year was so conspicuously attractive, and also by the fact that there were no British Columbia, Nova Scotia or New Brunswick non-competitive stands. Ontario was the only province that took trade space, erecting a display that elicited much favourable comment, and that took the place of the Federal display last year in focussing the attention of Royalty and other notabilities, invited to sample and appreciate Canadian fruit. From this stand also considerable propaganda for Ontario was done, large numbers of a special apple booklet prepared for the occasion, as well as other literature, being distributed, while assistants were always on hand to answer the inquiries that poured in from all sides. The lack of special stands made it impossible for similar work to be done on behalf of other provinces.

OVERSEAS SECTION.

"An achievement which, from some points of view, was even greater than the notable success of Nova Scotia in the British Empire Section, was that of the Ontario Fruit Growers' Association in capturing eleven gold, nine silver and one bronze medals, in the Overseas Section, and thus bettering their record of 1921, when they carried away the £100 silver cup for similar outstanding superiority. British Columbia suffered from the fact that the Okanagan Valley was scarcely represented at all, but the Creston district did remarkably well, in proportion to the number of entries sent forward, carrying away three gold medals, this total being increased by the Okanagan win of first prize for Spitzenbergs, to four for the Western province. The failure of British Columbia to participate adequately was responsible for the typically western varieties, Newton and Jonathan, going to Ontario. Nova Scotia did not do so well in this section, winning three silver and five bronze medals only."

In addition to the exhibits at the Imperial Show, the Fruit Branch supervised the setting up of the exhibits at both the Canadian National Exhibition and the Royal Agricultural Winter Fair. The fruit shown at the latter was a surprise to the people of Ontario and also to our competitors from the West. The coming into bearing of many of our large orchards planted between 1900

and 1915 with good varieties will improve greatly the quantity and quality of the commercial apple crop of this province.

## THE COLD STORAGE STATION, BRIGHTON.

The Department of Agriculture has put into operation a Cold Storage Demonstration Station, at Brighton, to be entirely at the convenience of the fruit growers. This cold storage warehouse represents about $37,500 of capital in building and equipment. The plant is equipped with modern refrigeration machinery and reliable insulated rooms with a capacity of storing 10,000 barrels. Fruit growers contemplating using cold storage for their fall and winter apples should prepared to co-operate with the management in order that the storing will be done satisfactorily to all concerned.

### Object of Cold Storage.

Every fruit grower is conversant with the difficulty of holding apples and other fruits during a warm picking season in a really marketable condition without considerable deterioration. To avoid this loss it is customary on the part of the grower to dispose of the crop quickly, which usually results in a "glutted" market and poor prices. The object of the cold storage plan is to co-operate with the growers in the best methods of handling their crop and to demonstrate the use of refrigeration in holding fruits, especially apples, in first-class condition until such time as there is a more favorable market.

Tight packages for cold storage apples are desirable, but it is essential in packing into barrels that the fruit is not pressed too tight. To avoid overpressing and at the same time to have a tight package, place head cushions at the top and bottom of the barrels. The Cold Storage Demonstration Station, Brighton, amply proved last season that apples picked, graded with culls out, and as many Grade 3 out as possible, lightly pressed in the barrels, and placed in cold storage the same day gave the best results. To illustrate the above method of handling, out of a consignment of 115 barrels of apples placed in cold storage on October 12th, 1921, 110 barrels were graded and packed April 5th, 1922, six months later.

Thirty-seven barrels of the above were Spy, and out of this possible number thirty-six barrels were packed, or one barrel shrinkage. These are most gratifying results, when one barrel shrinkage in ten barrels is considered a good average in dry storage. Whether the apples are graded and packed in the orchard, or placed in barrels "tree-run-culls-out" the principal feature of the entire process is to have the apples in the cold room the same day as picked, or at least within forty-eight hours of picking.

### Consigning Fruit to Cold Storage.

Growers consigning fruit to cold storage by railroad are advised to forward in refrigerator cars properly iced. During the season of 1921, shipment of apples arrived at cold storage during October in box cars registering 86 degrees Fahr. inside the cars. Apples subjected to such a temperature for two or three days are not suitable for cold storage, but should be placed on the market for immediate consumption.

### Keeping Qualities on Removal from Storage.

There is a prevailing opinion that apples once removed from cold storage have a tendency to "go down" very rapidly. A great deal depends upon the

variety, ripeness, soundness or condition of the fruit stored, and the temperature to which the fruit is removed. Cold storage experience has shown that when apples of exactly the same degree of ripeness and condition, placed in and removed from cold storage and common storage simultaneously, and exposed to the same outside temperature, the common storage apples will deteriorate more rapidly. It is unfair to compare apples removed from dry storage early in the season, with those taken from cold storage a good deal later. Apples held in any kind of storage until they are over-ripe will undoubtedly deteriorate very rapidly upon withdrawal to a warm temperature. The best results can be obtained on removing apples from cold storage by carefully handling and exposing the fruit to a cool temperature. Avoid a sudden rise or fall in temperature as this fluctuating causes fruit to "go down" most rapidly.

### Small Fruits.

At present the small fruit industry in the vicinity of Brighton, is very negligible and it is doubtful if there would be sufficient business to warrant keeping the cold storage open. Hence, the cold storage is not equipped with precooling rooms which are necessary for the proper handling of tender fruits, the plant being solely designed to accommodate apples. With these ideas in view the cold storage will be closed between apple seasons.

### Fumigation and Inspection Work Under the Fruit Pest Act.

The fumigation of nursery stock, inspection of nurseries and inspection of orchards for San Jose scale, black knot, peach yellows and little peach have been carried on as usual.

The scale is being kept well under control in the nurseries and is not so abundant in orchards as it formerly was.

There has been a slight increase in the number of peach trees infested with yellows and little peach compared with the last three years, but not sufficient to cause alarm.

Raspberry Diseases.—Owing to the prevalence of the raspberry diseases—leaf curl and mosaic—it will be necessary for the provincial inspector, and one of the nursery inspectors, to devote some time next year to the inspection of raspberry plots, so that plants free from disease may be available.

Spraying Experiments.—A series of experiments was conducted on a ten acre Snow and McIntosh orchard at Simcoe. Some new data was obtained that will be of value in future spraying work on these two varieties, which are so susceptible to the scab disease.

A series of spray experiments on grapes in the Niagara district was begun. This work will be continued for five years with the object of discovering the most economical method of controlling grape insects and diseases. Such knowledge is not at present available and is much needed.

Insect Investigation.—(a) *The Striped Cucumber Beetle.*—A study of this insect was begun this year and considerable progress made. This is the most important insect attacking cucumbers and other curcurbits. Its importance is increased by the fact that it is the main and probably the sole agent in transmitting the destructive bacterial disease known as "cucumber wilt". Up to the present time there has been no satisfactory method of control for the beetles, hence the need of the investigations.

(b) *The European Corn Borer.*—The study of the life history and control of this new past was continued during the season. Much further knowledge

of the life history and habits of the insect in all its stages was obtained. So far as can be judged we are now well on the way towards finding a satisfactory method of control, though there are many further matters of importance which must be elucidated before the study will be complete and before we can say definitely that we have solved the problem of control.

Four men and two Ford cars were engaged on the scouting work for this insect for the month of August and half of September.

Demonstration Work.—Many orchards have been visited in response to the request of fruit growers for assistance in the control of insect pests or diseases. In some cases these visits were turned into orchard meetings for the district.

In Manitoulin Island a great outbreak of grasshoppers, which threatened to destroy the entire grain crop and most of the meadows and pasture, required the assistance of the Entomologist. A cheap poison bait—costing not more than about ten cents an acre was recommended. The method of applying it was demonstrated and its effectiveness shown by actual test. The extent of the outbreak can be understood from the fact that 29,218 lbs. of arsenic were required. The results were very satisfactory, the crop being almost all saved and the confidence of the farmers in the merits of the remedy won.

Publications.—During the year two bulletins were published, one on the Cabbage Maggot and the other, a revised and enlarged edition of Insects Attacking Fruit Trees. In addition there was a small circular on the Cabbage Maggot and press letters on the Chinch Bug, Spotted Cutworms, Grasshoppers, European Corn Borer Control, and the Feather Mite.

## HORTICULTURAL EXPERIMENT STATION

In the following paragraphs the activities of the station at Vineland during the past year are grouped under four headings, General, Plant Breeding Work, Experimental Work, and Extension Activities.

### General.

In connection with the fifty acres of land which has been under lease from W. A. Wismer, this lease expired with the season of 1921. A new lease was then drawn up covering the present fifty acres and an additional thirty-five acres immediately adjoining. The new lease is to run for fifteen years with option of purchasing or releasing at the end of that time.

The fruit crops on the Experiment Station grounds were uniformly heavy in 1922. With heavy crops, which were general throughout the district, there were coupled poor prices so that the net revenue has been very much less than was anticipated in the early part of the season. On the other hand the expenses of picking, packing, etc., were heavy.

### Plant Breeding Work.

Generally, the results in the plant breeding work have been extremely encouraging. In strawberries a half dozen promising new varieties have been originated and are being rapidly propagated. A considerable number of plants had already been distributed for trial in 1920 and 1921, and these fruited in 1921 and 1922. As a result of this commercial trial, it has been possible to make a further rigid selection to the extent that an early hybrid (H.E.S. No. 2) is now looked upon as an extremely promising early season variety. General distribution of plants of this hybrid is being made.

In raspberry breeding a very promising seedling No. 14038, has been developed. This hybrid is a cross of Cuthbert x Marlboro. Compared with Cuthbert, with which it competes in season, No. 14038 is an equally or possibly more vigorous grower, canes stouter, more upright, and entirely free of small spines common to the Cuthbert. The fruit is larger and a firmer texture, so that it should prove a better shipper. The fruit is more exposed on the cane than the Cuthbert and therefore easier to gather. On the other hand No. 14038 is of somewhat poorer dessert quality than Cuthbert and the berry is of lighter colour, making it less desirable as a canning berry. However, it is probably sufficiently good in both these respects that they need not necessarily be considered faults.

Results from peach breeding have been very encouraging indeed. The chief peach breeding project has been the attempt to secure a seasonal succession of peaches of the Elberta type. That is, the attempt has been made to extend the Elberta season by originating seedlings having all the good qualities of the Elberta but differing from it in season of maturity only. As a result of the work which has been done, we have a peach of the Elberta type ripening in the St. John season; we have another Elberta type peach ripening about midway season between St. John and Elberta; and we have two seedlings of the Elberta type ripening from a week to ten days after the Elberta itself.

In securing this extension of the Elberta season we have had to sacrifice something of dessert quality of the fruit. It has been felt, however, that this sacrifice would have to be made to secure shipping quality. The St. John peach, for example, while of high quality will not stand distant shipment as well as the Elberta. The seedlings which have been originated will, it is felt, be equally as good shippers as the Elberta and will be at least equal in dessert quality if not superior.

In the grape breeding work rapid selection of the 21,000 hybrids was made during the past season. At the present time only about 1,800 vines remain and half of these were left because they have not fruited. It is too early of course to pass judgment on the merits of any of the seedlings selected. However, there are many of them that show distinct promise and we have every expectation of securing distinct improvements in grape varieties. In particular we are working for self-fertile red varieties of grapes, equal to the Concord in productiveness and of better dessert and shipping quality. Several seedlings give promise of combining these qualities.

In the greenhouse breeding work with cucumbers and tomatoes, continued selection is being carried on with both these crops. The extent of work of course which can be done is very much limited by the amount of available glass, nevertheless good progress has been made and the work is being continued.

## Experimental Work.

The experiment in severity of pruning is practically completed so far as the pruning of trees until bearing age is reached, is concerned. The results of the experiment have been of extreme value in demonstrating that, contrary to the old teaching, the lightly pruned tree makes the most growth while it is young, and comes into bearing soonest. Or putting it the other way, with heavier pruning, growth is inhibited and fruiting delayed. The experiment has shown further that as the trees come into bearing the heavier pruned trees gradually catch up to the more lightly pruned ones in total size. This of course

is due to the fact that the lightly pruned trees have slackened in growth with the heavy crops of fruit being produced.

With a view to studying the correlated problems of soil fertility, distance of planting, and severity of pruning, a six acre block of Elberta peaches was set out in the spring of 1921. This orchard has made very fine growth during the past season. The pruning part of the experiment will be commenced with the spring pruning of 1923, and from then on there should be a gradual accumulation of evidence.

There is a great deal of experimental evidence available indicating that the failure of apple trees to do as well under sod conditions as under clean cultivation conditions is due not so much to the competition of the sod but more to the comparative lack of available nitrates under sod conditions. This points to the possibility of supplementing sod orchards with some readily available form of nitrogen. With this in view a six acre block of apples was planted out in the spring of 1922. In this orchard definite plots will be seeded to alfalfa or some other legume, to grass and others will be clean cultivated. Other plots again will be clean cultivated for a few years and then seeded down. Some alfalfa plots will receive no further manuring while others will have applications of either barnyard manure or commercial fertilizers, or both, as circumstances seem to warrant. Grass plots and clean cultivation plots will receive similar treatment. The idea in brief is to determine whether apples can be economically produced under sod conditions where provision is made to equalize soil fertility as between sod and clean cultivated conditions. If trees under sod can be made to grow well and produce good crops, then the decreased cost of orchard operations and the increased colour and keeping qualities of the fruit would justify a serious consideration of sod culture in orchard operations. In most orchards which are in sod at the present time, the sod constitutes a neglected condition. No effort is made to properly supplement it.

In soil fertilization of tomatoes, an experiment has been carried on for three years and completed in 1922. This experiment simply consisted in a comparative test of various commercial fertilizers recommended particularly for tomato culture. Briefly the results of this experiment have shown that phosphorus is a good fertilizer for tomatoes under average soil conditions, while nitrogen and potash have been of comparatively little benefit. Nitrogen was of value where applied in small quantity early in the season. Barnyard manure was used on all plots.

## Extension Activities.

The following table shows in brief the amount and kind of extension work carried on from the station during 1922. During the year fifty-five fruit growers' meetings of one kind or another were attended and addressed by some member of the Experiment Station staff. Most of these meetings of course took place in the winter months. The total attendance of these meetings was 1619. During the year also many growers were visited at their orchards and many growers visited the station, the total for the season being 638. This figure includes both visits to and visits from growers. In correspondence and telephone 784 requests for information were received and answered. The total personal services rendered either at meetings, visits to or from growers or by correspondence or telephone totalled 3,041.

| | Jan. | Feb. | Mar. | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meetings attended.... | 17 | 19 | 6 | 3 | 2 | . | .. | 1 | .. | 1 | 3 | 3 | 55 |
| Total attendance..... | 380 | 412 | 395 | 75 | 55 | .. | .. | 20 | .. | 80 | 93 | 109 | 1,619 |
| Visits to and from growers..... | 10 | 17 | 35 | 56 | 57 | 72 | 63 | 92 | 111 | 90 | 17 | 18 | 638 |
| Corres. and Tel..... | 33 | 68 | 92 | 90 | 118 | 82 | 69 | 68 | 34 | 63 | 30 | 37 | 784 |
| Total... | 423 | 497 | 522 | 221 | 230 | 154 | 132 | 180 | 145 | 233 | 140 | 164 | 3,041 |

In addition to the above eight leaflets were sent out during the year as follows:—

No. 10—Pruning Young Fruit Trees.
11—Pear Blight.
12—Planting Distances for Fruit Trees.
13—Plant Breeding Problems.
14—Thin Your Fruit.
15—Cover Crops for the Orchard.
16—Raspberry Mosaic and Leaf Curl.
17—Observations on the use of Commercial Fertilizers for Tomatoes.
18—Co-operation in British Columbia.

With these leaflets there were also included several circulars on insect pests prepared by Mr. W. A. Ross of the Dominion Entomological Branch.

The cost of sending out these leaflets is considerable, but so many expressions of approval on these leaflets, verbal and written, have been received that the expense may be considered of secondary importance.

## APIARY INSPECTION

During the seasons of 1922 apiary inspection work was carried out almost entirely with the aid of the County Beekeepers' Associations throughout the province. The County Associations recommended men and these recommendations were forwarded to the Minister of Agriculture. It was hoped that this plan would prove a success and that satisfactory inspection would result. In practice, however, this office found that in many cases men were recommended who were not sufficiently experienced in the diagnosis of the brood diseases of bees, so that the system proved unsatisfactory.

The difficulties in apiary inspection have been: first, the difficulty of securing sufficient experienced men to carry on the inspection work, and, secondly, so many beekeepers in whose apiaries disease is found are not able to treat the infected colonies successfully. For the season of 1923 it is hoped that more experienced beekeepers will aid the department, and that the inspection can be carried on for a longer period. In the past it has been almost impossible to reinspect disease infected locations in successive seasons. This has made it difficult to show definitely whether the brood diseases of bees are increasing or whether these diseases are being held in check.

Over thirty apiary demonstration or field days were held throughout the province and from these practical demonstrations the beekeepers secured considerable information.

The queen-rearing apiary is now located on the Experimental Farm, Ridgetown, and last season the apiary and surrounding locality was requeened with selected queens from a queen kindly sent us by C. B. Gooderham, Dominion Apiarist. It is hoped that queens will be reared and sold during the seasons of 1923.

## AGRICULTURAL REPRESENTATIVE BRANCH

The activities of the Agricultural Representatives increase each year. Resignations were received during the year from the Agricultural Representatives in Essex, Hastings and York Counties. New appointments were made in these counties so that the total number of Agricultural Representatives in the province remains at fifty. Permanent assistants were maintained in a few of the larger counties, while temporary assistants were provided to assist with school fairs, one month and three months' courses in Agriculture.

### RURAL SCHOOL FAIRS.

The value and popularity of Rural School Fairs is illustrated by the wonderful growth and expansion, of this line of educational work for the children in the rural districts, from one school fair in 1909 attended by 80 children and 170 adults to 490 fairs in 1922 attended by 157,486 children and 233,298 adults. At the first school fair in 1909 the children made 174 entries and the total number of entries in 1922 amounted to 225,370, or an average of 459 entries at each school fair. The school fair work is being extended as rapidly as the demands of the public can be met by the Agricultural Representatives and it will only be a short time until practically all public school children in rural Ontario will be able to take advantage of the opportunities afforded by Rural School Fairs.

School Fair Statistics for the Year 1922.

| | |
|---|---|
| No. of School Fairs | 490 |
| No. of schools included | 4,266 |
| No. of children taking part | 111,974 |
| No. of Home Plots | 141,838 |
| No. of entries made at the Fairs | 225,370 |
| No. of children attending Fairs | 157,486 |
| No of adults attending Fairs | 233,298 |
| Total attendance at Fairs | 390,784 |

During the past year, the following quantities of seeds and eggs were distributed by the Ontario Department of Agriculture for school fair purposes:

| | |
|---|---|
| Potatoes | 1,085 bags. |
| Oats, Barley and Wheat | 330 bushels. |
| Peas and Corn (Sweet and Field) | 33,300 packages. |
| Beets, Carrots, Onions and Parsnips | 54,000 " |
| Mangels and Turnips | 16,325 " |
| Asters, Phlox, Cosmos, Sweet Peas, Marigold and Zinnia | 26,685 " |
| Eggs (Bred-to-Lay Barred Plymouth Rocks) | 12,259 dozens. |

School fairs have become so firmly established and to such an extent part of the life of the rural communities that the people themselves have been willing to assume greater responsibility in connection with their organization and management. Thus we found trustees' and ratepayers' associations being organized for the purpose of carrying on the school fair work in conjunction with the teachers and school children and in co-operation with the Agricultural Representatives. In some instances the Women's Institutes have functioned in this capacity, and in other cases a committee of adults have been named to co-operate with, and direct the work of, the juvenile school fair organizations composed of boys and girls from the schools in each school fair district. Where adult organizations have been created to assist with school fairs, they have taken

charge of financing the prize list, securing special prizes, arranging for halls or other suitable buildings where necessary, and have assisted with arranging and revising prize lists and with the general management of the school fairs. These organizations have proven very valuable and efficient, particularly where they have taken charge of the finances, thus relieving the Agricultural Representative, who acts as general manager of all school fairs in his county, of considerable responsibility.

The representative for Perth speaks of the work of the trustees' and ratepayers' association as follows:

"I find this manner of organization works very well. By having the people in the section actually connected with the management of the School Fair, seems to create a deeper interest, not only in the Fair itself but in the real educational value of the Children's Fair. People do not seem to take the attitude that it is a government movement and is there to be criticized, but being an organization of their very own, they realize that the success is due to what efforts they themselves put forth."

The representative for Lambton county also quotes as follows regarding trustees' and ratepayers' associations:

"They look after financing the prize list, securing of special prizes and create a general all-round interest in the community. The fact of the success or the failure of the School Fair is made a community problem. In every case, I find there are no failures, but a general, all-round community effort to make each fair the best in the county."

### Distribution of School Fair Supplies.

The distribution of school fair seeds and eggs has received careful study and consideration by the Agricultural representatives in order that the supplies may be in the hands of the school children as early as the weather and other seasonal conditions will permit. The condition of the roads in the spring of the year is an important factor in this connection and in some portions of the province early distribution where necessary has to be made by express or parcel post. In an endeavor to permit the pupils to hatch early chickens, some representatives sent eggs out by parcel post before the roads were passable for automobiles with the result that rather poor hatches of chickens resulted, due probably to the eggs becoming chilled. In another case the pupil received beet seed early in the spring by mail and planted as soon as soil conditions would permit, with the result that aided by the excellent growing season last year, his beets were greatly over-grown and therefore outclassed at the fair. The foregoing examples go to show that the question of distribution of school fair supplies requires very careful consideration and equally carefully well planned instructions being issued to the school children, if best results are to be obtained.

It would seem that the method of distribution is one which has to be worked out in relationship to the varying local conditions as to seasonal advancement, condition of roads and rural mail route centres. Halton county, for example, reports a 78.5% hatch where eggs were distributed by automobile, while Renfrew reports at 64% hatch in eggs distributed by express and a 56% hatch in eggs distributed by parcel post and Prescott and Russell a 35% hatch of eggs distributed by parcel post.

In an endeavour to facilitate distribution and reduce the cost, a considerable number of representatives have instituted distribution days. For this purpose, the school fair directors for the various schools in a school fair district are brought together at a central point for the purpose of receiving the supplies of seeds and eggs for their respective schools. This method of distribution is the most direct and the least expensive, and enables the representatives to discuss the

various phases of school fair work with the school directors. The teachers and trustees are often invited to attend these distribution meetings, when the prize lists are revised, and all organization work completed.

The inspection of school fair plots during the growing season has not been generally carried on for several years, but in a number of counties in certain schools or school fair districts, arrangements have been made to have the plots inspected by the teachers or some one appointed by the school fair association. Where such local arrangements have been possible, the results have been very satisfactory.

The season of 1922 was particularly favourable for the growing of most crops, with the training received in selecting specimens of the proper type, quality and size by a majority of the pupils from exhibiting at previous school fairs combined to make the quality of exhibits surpass that of any previous year. The steady improvement in quality and uniformity of exhibits are the best indications of the educational value of school fairs and their far reaching effects in broadening and developing the minds of the boys and girls in rural Ontario. The value of the school fair in this respect is strengthened by the fact that at the majority of fairs, the judges discuss, with the pupils exhibiting, the various classes, pointing out the quality and type desired, and instructing the children as far as possible in selecting and preparing their exhibits.

Owing to the increasing number of entries, the representative in Dundas county found it necessary to have exhibits delivered on the afternoon previous to the fair. This enabled the judges to complete their work without the delay which would have resulted if the large number of exhibits had been received and placed on the morning of the fair.

### Championship School Fairs.

Championship School Fairs at which the first three prize winners from the township or district school fairs are allowed to compete were held in the following counties: Frontenance, Halton, Huron, Norfolk, Oxford, Welland, Wentworth and the District of Manitoulin Island. These championship fairs are held in conjunction with county fairs, the latter organizations providing accommodation for the exhibits and paying the prize money. The Championship School Fair is a fitting climax to the school fair season, and brings together the winners at the various local school fairs in friendly competition for county honors. They also serve to bring the school children into closer touch with the Agricultural Society Fairs at which they are likely to become exhibitors at an early age. These fairs would undoubtedly become much more general throughout the province were it not for the transportation difficulties in connection with getting the exhibits brought in from outlying sections to a central point, and also to the fact that many school fairs of necessity must be held after the Agricultural Society Fairs.

### Joint Agricultural Society and School Fairs.

These continue to be held at a number of points throughout the province with varying degrees of success. Generally speaking, however, where the school fair is held on the first day of the Agricultural Society Fair the joint fair is fairly successful and all the features of both can be carried out successfully. On the other hand where the school fair is held on the second or main day of the other fair, considerable sacrifices have to be made by both. The general opinion, would, therefore, seem to be that unless there are some peculiar local

circumstances making joint fairs advisable they cannot be generally recommended. Past experiences, however, and the increasing number of entries reported in the children's department at many of our agricultural fairs indicate that the school fair is having a beneficial effect in increasing entries at the fall fairs which provide suitable classes for the boys' and girls' work.

### New Features.

New features are continually being introduced at the school fairs as a means of maintaining the interest of the children and providing amusement for both the young and older people attending the fairs. Many of the features outside of the regular prize list are very educational and instructive. For example, the representative in Wentworth added prizes this year for Canning Demonstrations at the school fairs, and at six of the ten school fairs in his county had competitive canning demonstrations by teams of three girls from a school. Six township teams competed in the canning demonstration at the Championship School Fair. Bacon Hog Demonstrations were also staged at the School Fairs in Wentworth county by teams of three boys from a school. The following is a list of some of the competitive features taken from various school fair prize lists: Live Stock Judging Competition Teams of three boys; Sewing and Darning Competitions teams of three girls; Naming Competitions in naming live stock (from pictures), fruit, vegetables, and weeds; table setting; chicken plucking; riding, hitching and driving; public speaking; singing competitions for individuals; school parades and Strathcona Drill for Schools.

The public speaking competition is one deserving special consideration and is encouraged as far as possible at all school fairs. The success of the public speaking competition is largely dependent upon the attitude of the teachers and the encouragement they give their pupils. Many excellent speeches are made by the boys and girls at the schools fairs, and the number taking part has greatly increased in recent years. The value of public speaking competitions in establishing confidence and freedom of speech in boys and girls when appearing before large gatherings of people cannot be over estimated.

Judges and assistants for school fairs were sent out by this department as in former years, and excellent satisfaction and co-operation has been received. In Eastern Ontario the staff of the Kemptville Agricultural School assisted with the judging at as many school fairs as it was possible for them to attend. This assistance was greatly appreciated by the Agricultural Representatives, and the staff of the Kemptville Agricultural School appreciated the opportunity of getting out amongst the people of Eastern Ontario and advertising the school.

### Home Garden Contests.

The Home Garden Competition forms an important link in the chain of activities of the Agricultural Representatives. This competition in most cases reaches the boys and girls who have graduated from school fair work, and through it the representative is able to keep in touch with them and their work, and in many cases it provides a means of becoming acquainted with the activities and problems of their parents. There were 65 Home Garden Competitions conducted in 38 counties with approximately 1,700 boys and girls competing. The contestants in this competition are supplied with sufficient garden seeds to plant a plot of ground 30 feet x 40 feet for hand cultivation or 10 rows 75 feet long to permit of horse cultivation. The form the garden will take is optional. Instructions for planting and caring for the vegetables

are also provided. Each competition consisted of 25 gardens, and each competitor paid 50c. for the seeds. The Agricultural Representatives inspected the gardens during the months of July and August and awarded prizes taking into consideration the planning of the garden, care and cultivation, quantity and quality of vegetables produced. This competition has done a great deal to popularize the use of green vegetables, and to introduce valuable varieties not extensively grown throughout the country.

In Carleton county the Boys' Potato Growing Contest which was established in 1912 by the late R. B. Whyte and which gave excellent results for a number of years has been changed to a Boys' Mangel Growing Competition. The Girls' Gardening and Canning Competition, also started by the late R. B. Whyte, is being continued. The two competitions have been of great value in their respective lines and much good has been accomplished, but at the present time the boys and girls are not taking part in these competitions in as large numbers as might be expected, due no doubt to the regulations which require the contestants to make an exhibit of their products at the county fair.

### Poultry Breeding Stations.

The Poultry Breeding Stations established in the counties under the directions and supervision of the Agricultural Representatives supplied 11,563½ dozens of eggs for school fairs during the season of 1922, and the number sold by these stations to farmers for hatching after school fair demands had been met amounted to 3,654 dozens. In a few instances Bred-to-lay Barred Plymouth Rock eggs were supplied to school fairs from the Poultry Department at the Ontario Agricultural College at Guelph, but only in cases where the breeding stations in the county could not supply the demands, or in cases where good foundation stock was required to establish additional breeding stations.

Rigid culling of the Poultry Breeding Stations was carried out as in former years with the result that these flocks have been graded up to a high standard. Specially selected cockerels of a high producing bred-to-lay strain of Barred Plymouth Rocks are sent out from the Ontario Agricultural College each year to head these flocks. This careful supervision and culling of the flocks supplying eggs for school fair purposes is having a marked effect on the type, quality and production of the farm flocks throughout the country, as we find in a great many cases the chickens hatched by the children in the school fair work form the foundation stock for the home poultry flock, and with breeding stations in every county this distribution covers all parts of the province.

Poultry Breeding Station operators are co-operating with the representatives in an endeavour to further improve the quality of eggs and in this connection fertility tests were made of the eggs produced at a considerable number of breeding stations before they were used for distribution. Under the heading of School Fairs the question of the great variation in the percentage of chickens hatched was touched upon. The wide variation in the percentage of chickens hatched may be influenced by several factors, such as fertility of eggs, method of distribution by auto, express or mail, care of eggs by children before setting, and length of time held before setting. These problems with the importance of maximum results, and a desire not to disappoint the children receiving eggs has led to the suggestion of experimenting with the distribution of day old chicks. The Representatives Conference in July, 1922 recommended that this method be tried out in a few places in 1923. Arrangements will, therefore, probably be made for a number of breeding stations to distribute day old chicks for some of the school fairs in 1923.

POULTRY BREEDING STATION STATISTICS FOR YEAR 1922.

| County. | No. of P.B. Stations. | No. of Hens and Pullets. | No. of Cockerels | No. Dozen Eggs for School Fairs | No. Dozen Eggs Sold to Farmers. |
|---|---|---|---|---|---|
| Algoma | 6 | 295 | 17 | 132 | .. |
| Brant | 6 | 242 | 20 | 195 | .. |
| Bruce | 6 | 738 | 29 | 417 | 200 |
| Carleton | 4 | .. | 15 | 130 | 30 |
| Dufferin | 4 | 450 | 21 | 139 | .. |
| Dundas | 5 | 504 | 23 | 280 | 100 (over) |
| Durham | 5 | 340 | 19 | 182 | .. |
| Elgin | 7 | 675 | 30 | 589 | 180 |
| Essex | 5 | 400 | .. | 255½ | .. |
| Frontenac | 4 | 348 | 16 | 165 | 80 |
| Grenville | 4 | 430 | 16 | 117 | .. |
| Glengarry | 2 | .. | .. | .. | .. |
| Grey | 5 | 330 | 14 | 632 | 50 |
| Haldimand | 1 | 160 | 6 | 200 | 40 |
| Halton | 4 | 800 | 24 | 220½ | .. |
| Hastings | 3 | 335 | 6 | 40 | .. |
| Huron | 2 | 200 | 6 | 496 | .. |
| Kent | 5 | 730 | 24 | 601 | 300 |
| Kenora | 3 | 207 | .. | .. | .. |
| Lambton | 4 | 449 | 23 | 441 | 260 |
| Lanark | 3 | 210 | .. | 182 | .. |
| Lennox and Addington | 2 | 205 | 12 | 162 | 180 |
| Leeds | 9 | 670 | 26 | 288 | 150 |
| Lincoln | 3 | 155 | 7 | 228 | 90 |
| Manitoulin | 7 | 279 | 14 | 203 | .. |
| Muskoka | 2 | 120 | 6 | 188 | .. |
| Middlesex | 4 | 285 | .. | 246 | 200 |
| Norfolk | 4 | 340 | 15 | 244 | 105 |
| Northumberland | 5 | .. | .. | 265 | 9 |
| Ontario | 5 | 445 | 24 | 354 | .. |
| Oxford | 3 | 370 | 19 | 319 | 206 |
| Peel | 3 | 375 | 9 | 300½ | 75 |
| Perth | 3 | 220 | 12 | 67 | 150 |
| Peterborough | 2 | 185 | 10 | 121 | 70 |
| Prescott and Russell | 3 | 397 | 19 | 165 | 100 |
| Prince Edward | 2 | 70 | 5 | 122 | .. |
| Rainy River | 8 | 260 | 10 | 183 | .. |
| Renfrew | 5 | 300 | 14 | 101 | .. |
| Simcoe, North | 4 | 230 | 13 | 424 | .. |
| Simcoe, South | 1 | 225 | 10 | 321 | 200 |
| Sudbury | 1 | 50 | 4 | .. | .. |
| Timiskaming— | | | | | |
| Ft. William | 1 | 120 | 6 | 54 | 25 |
| Pt. Arthur | 5 | 265 | 16 | 142 | 400 |
| Victoria | 5 | 372 | 18 | 242 | .. |
| Waterloo | 4 | 300 | 16 | 217 | .. |
| Welland | 5 | 534 | 18 | 317 | .. |
| Wellington | 3 | 610 | 16 | 88 | 289 |
| Wentworth | 5 | 208 | 9 | 303 | 165 |
| York | 4 | 185 | 8 | 245 | .. |
| Total | 196 | 15,618 | 645 | 11,323½ | 3,654 |

## Courses in Agriculture.

Forty Short Courses in Practical Agriculture were conducted by the Agricultural Representatives during January and February, 1922. These courses were attended by 1,190 young farmers and the average attendance at each course was 29. Since 1912 three hundred and fifty-one such courses have been

held, with a total attendance of 8,527, and an average attendance of 24 young farmers. These courses in Agriculture are made as practical as possible and the Agricultural Representative with a knowledge of conditions and the problems of the farmers in his country is able to adapt the course of instruction to meet these requirements. The lectures and demonstrations are for the most part given by the representative and his assistant supplied for the duration of the course by the Department of Agriculture. Outside lecturers, are supplied on request to discuss special subjects such as Veterinary Science, Fruit and Vegetable Growing, Beekeeping, Markets and Co-operation, Farm Management and Plant Diseases.

Live stock judging forms an important part of these courses in Agriculture and for training in this work visits are made to live stock breeders in the vicinity of where the class is being held. Practical demonstration are also conducted in connection with milk testing, pruning, candling eggs, seed judging, and in fact where ever possible the work taken up or discussed is given a practical application and the students are all required to take part, and thus learn modern methods and practices by doing things themselves.

The classes are usually organized at the beginning so that the students have their own business organizations and transact all business incidental to the conducting of the course themselves. Literary Societies are formed and all students afforded an opportunity of securing training in debating, delivering addresses and conducting meetings. Courses in Domestic Science and Home Nursing are often held in conjunction with the courses in Agriculture and when such is the case joint lectures are given on such subjects as Poultry, Bees, Dairying, Fruit and Vegetable Growing.

The Representative for Lennox and Addington reports on special features introduced at his course in Agriculture as follows:—

"In addition to the usual competitions in stock judging, seed judging and debates, one or two practical problems were worked out by several members of the class. The idea of the practical work was to encourage the students to take a greater interest in farm work. The results of practical work with poultry are as follows:—

| Name of Owner. | Breed and Variety. | Time. | No. of Eggs laid. | Value. | Cost of Feed. | Net Profit. |
|---|---|---|---|---|---|---|
| Stanley Jackson.... | (32 hens) Barred Rocks..... | 3 weeks. | 87 | $2 83 | $1 80 | $1 03 |
| Lloyd Graham..... | (40 hens) White Wyandottes ... | 3 weeks. | 305 | 9 57 | 5 36 | 4 21 |
| Milo Jackson..... | (62 hens) Rhode Island Reds... | 2 weeks 5 days. | 194 | 6 24 | 5 65 | 59 |
| M. H. Switzer..... | (74 hens) White Wyandottes .. | 2 weeks. | 579 | 18 82 | 7 28 | 11 54 |

The value of the eggs was figures on the regular selling price at Enterprise and the cost of the feed was figured on the selling price of the different kinds of feed used in feeding the poultry, so that the figures are as near correct as can be obtained in farm practice.

The results of practical work with dairy cows are as follows:—

| Name of Owner. | Name of Cow. | Time. | Lbs. of Milk. | Test. | Value of Milk. | Cost of Feed. | Net Profit. |
|---|---|---|---|---|---|---|---|
| Maitland Jackson .. | Sally..... | 3 weeks. | 457 | 3.6% | $6 85 | $6 00 | $0 85 |
| Eric Jackson..... | Tidy Princess Hengerveld..... | 2 weeks. | 476 | 3.3% | 7 14 | 3 85 | 3 29 |

The cost of the feed was figured on the selling price to the farmers and the milk was sold at $1.50 per cwt., and as in the case of the practical work in poultry, we endeavoured to come as near as possible to actual farming conditions.

We continued a special feature which was introduced last winter, namely, the question box. Students were permitted the privilege of stating their home problems in the form of a question without signing their names. The questions were then taken from the box, carefully discussed at the class, and the most helpful information imparted to the parties concerned.

### Three Months Courses in Agriculture and Domestic Science.

The four to six weeks courses in practical agriculture, conducted throughout the province since 1912 have served a very useful purpose, but it has been felt for some that a large number of young people in the rural districts would be greatly benefited by longer courses in Agriculture and Domestic Science during the winter months. Four courses in practical Agriculture and Domestic Science were therefore arranged and conducted during the winter of 1921-22. These courses commenced on November 28th, 1921, and ran until March 3rd, 1922, and were conducted in the following counties: Peel, Wentworth, Middlesex and Huron.

| Attendance. | | Agriculture. | | Domestic Science. | |
|---|---|---|---|---|---|
| County. | Place. | On Roll. | Average daily Attendance. | On Roll. | Average daily Attendance. |
| Peel..... | Bolton..... | 72 | 66 | 74 | 58 |
| Wentworth..... | Waterdown..... | 60 | 40 | 45 | 30 |
| Middlesex..... | Strathroy..... | 37 | 25 | 40 | 25 |
| Huron..... | Wingham..... | 37 | 30 | 31 | 26 |
| Total..... | | 206 | 161 | 190 | 139 |
| Average..... | | 51 | 40 | 47 | 36 |

A staff of seventeen specialists handled the lectures and demonstrations in Agriculture, and eight specialists the work in Domestic Science, Home Nursing and Sewing. The local communities co-operated in supplying suitable halls, heated and lighted, without cost and the township and county councils assisted with grants for equipment and special prizes.

The Agricultural Representatives report that these courses were an unqualified success and greatly appreciated by the boys and girls. Arrangements are being made to conduct eight Three Months Courses during 1923.

## Special Courses

Sheep and Swine Marketing Course.—The Sheep and Swine Division, Live Stock branch, Dominion Department of Agriculture in co-operation with the Agricultural Representatives conducted three day Sheep and Swine Marketing Courses at twenty-seven points throughout the province—seventeen in Western and ten in Eastern Ontario. These courses were similar to those conducted during the winter of 1921 under a similar arrangement, and were held as far as possible in conjunction with the Month Courses in Agriculture.

Courses in Swine Marketing.—The Industrial and Development Council of Canadian Meat Packers co-operated with the Department of Agriculture in holding special one day courses in Swine Marketing at sixteen places throughout the province. These courses also were held in conjunction with the months' courses in agriculture but were entirely separate from the Sheep and Swine Marketing Courses and held at different places. The Swine Marketing Courses were conducted by a practical hog breeder and a representative of the Canadian Meat Packers. The discussions were very practical, dealing with the status of the bacon hog industry in this country from the standpoint of producer and feeder and market requirements both domestic and foreign. The programme followed consisted of a lecture and demonstration on Cured Wiltshire Sides, a lecture and demonstration on Swine Carcasses and Pork Cuts, a lecture and demonstration on Select Bacon Hogs, grading demonstrations with a car load of hogs, and a lecture on "The Hog Industry in Denmark". The cured Wiltshire sides and fresh dressed carcasses were supplied by the packing plants, and the live hogs for the demonstrations were provided by farmers in the localities where the courses were held.

These courses were greatly appreciated and gave farmers a better understanding of the bacon hog industry and the market requirements, particularly in regard to our export bacon trade.

Hog Grading Demonstrations.—The system for marketing hogs on a graded basis put into effect by the Dominion Department of Agriculture during 1922 created a demand throughout the province for information on hog grading and grades. To meet this demand the Agricultural Representatives conducted a considerable number of Hog Grading Demonstrations at various shipping points. The Dominion Department of Agriculture co-operated in this work by supplying demonstrators to explain and do the grading. These demonstrations were usually held at local shipping points on shipping days so that a good supply of hogs was available for the work. The farmers had the opportunity of seeing their own hogs graded and of becoming familiar with the different grades of hogs and the system of grading.

Short Courses in Stock Judging.—A number of two or three day general Stock Judging Courses were held throughout the province last year and created considerable interest. These courses were for the benefit of all farmers in the community and not exclusive judging courses for training junior farmers. In addition to the instruction on live stock judging, the demonstrators who were supplied by the Institutes Branch of the Department of Agriculture gave lectures on the feeding, care and management of the different classes of stock.

Other Special Courses.—Special Courses were held from time to time by the Representatives to meet some special need or demand which arose in connection with certain special lines of work being carried on in their respective counties. These special courses included Stock Judging, Fruit and Vegetable Growing, and Live Stock Field Days. The Live Stock Field days were usually

get-together rallies of the various breed organizations for the purpose of having the members become better acquainted and to boost the breed of stock represented.

### Junior Farmers' Improvement Associations.

The Junior Farmers' Improvement Associations continue to be an important factor in connection with the activities of the communities where they have been organized. Their activities have been so well directed in the best interests of the rural districts, that they are being looked to for assistance in connection with almost every important work which affects the community, and we find individual junior farmers being called upon to assume responsible offices in connection with almost every agricultural or community organization. Including those organized during 1922, we now have 109 Junior Farmers' Improvement Associations with a membership of 3,118.

The activities of Junior Farmers' Improvement Associations in connection with business, educational, social and agricultural activities have been dealt with in previous reports, and this work has been continued and extended during the past year. During the year 1922, junior farmers took an active part in organizing Pig Clubs, Dairy Cattle Clubs, Beef Cattle Clubs, Live Stock Judging Clubs, Debating Clubs, Athletic Field Days, and Motor Trips. The Junior Farmers in Wentworth county conducted a very successful moonlight excursion on Lake Ontario, which incidentally added $200 to the funds in their treasury. This organization devotes its funds largely to giving prizes in the way of free trips to the winners in the Junior Farmers' County Live Stock judging competitions, and for the past four years has paid the expenses of at least one man to the International Live Stock Exposition at Chicago.

### Junior Farmers at the International.

A party of ten junior farmers from various counties spent a week in Chicago at the 1922 International Live Stock Exposition. These young men were winners in their county livestock judging competitions, the prize for highest standing being a trip to the International with expenses paid. During the week in Chicago, the junior farmers were guests of the United States National Committee on Boys and Girls Club Work, and participated in part of the Boys' and Girls' Club tour conducted by that organization.

### Junior Farmers' Plowing Competitions.

The Junior Farmers in Ontario conducted nineteen plowing competitions last year with 227 young men competing. These competitions were supervised by the Agricultural Representatives and the work was done on the home farms of the competitors, with the result that young men who could not be persuaded to compete at a regular plowing match, took part and received the benefits and training which a plowing competition afforded. The prizes offered at these plowing competitions have all been secured locally in the past, but in order to stimulate this work and encourage better plowing, the Department of Agriculture last year gave a grant for each competition equal to one-half of the total prize money paid, the maximum grant for any one competition being $25. This assistance enabled the payment of substantial prizes and considerably increased the number of competitors.

The following is a brief statement of the number of plowing competitions held, together with number of contestants and prizes paid:

JUNIOR FARMERS' PLOWING COMPETITIONS, 1922.

| County. | Name of Organization Conducting Competition. | No. of Competitors. | Prizes Paid. | Amount of Grant |
|---|---|---|---|---|
| Brant | Brant Junior Farmers | 9 | $11 50 | $5 75 |
| Bruce | Ripley Junior Farmers | 10 | 20 00 | 10 00 |
| " | Paisley Junior Farmers | 12 | 25 00 | 12 50 |
| " | Port Elgin Junior Farmers | 10 | 25 00 | 12 50 |
| Dundas | Greater Dundas Junior Farmers | 19 | 50 00 | 25 00 |
| Grenville | Grenville Junior Farmers | 19 | 105 00 | 25 00 |
| Haldimand | Fisherville Junior Farmers | 5 | 28 00 | 14 00 |
| Hastings | Thurlow Junior Farmers | 14 | 91 50 | 25 00 |
| Huron | Usborne and Stephen Junior Farmers | 7 | 22 00 | 11 00 |
| " | Wingham Junior Farmers | 10 | 20 00 | 10 00 |
| " | Howick Junior Farmers | 8 | 40 00 | 20 00 |
| Leeds | Leeds Junior Farmers | 15 | 50 00 | 25 00 |
| Lincoln | Lincoln Junior Farmers | 11 | 59 00 | 25 00 |
| Peel | Peel Union Junior Farmers | 16 | 80 00 | 25 00 |
| Perth | Perth Junior Farmers | 16 | 50 00 | 25 00 |
| Waterloo | Elmira Junior Farmers | 10 | 20 00 | 10 00 |
| " | Galt Junior Farmers | 4 | 20 00 | 10 00 |
| " | Ayr Junior Farmers | 15 | 50 00 | 25 00 |
| York | York Junior Farmers | 17 | 58 00 | 25 00 |
| Total | 19 | 227 | $825 00 | $340 75 |

## Inter-County Livestock Judging Competitions.

The Inter-County Livestock Judging Competitions held in conjunction with the Guelph and Ottawa Winter Fairs have always been very popular and keenly contested, but it remained for the Royal Agricultural Winter Fair, where the largest livestock judging competition ever held was conducted, to demonstrate how thoroughly these judging competitions are appreciated by the junior farmers throughout the province. Thirty-five teams out of a possible forty-one competed at the Royal, twenty-six out of a possible twenty-seven competed at the Guelph Winter Fair, and ten out of a possible fourteen competed at the Ottawa Winter Fair. The counties entered in the judging competition at the Royal Winter Fair were represented by teams of five junior farmers, while at Guelph and Ottawa they were represented by teams of three junior farmers. The competition at the Royal was open to all counties in the province, while the competition at Guelph was open to the counties of Victoria, Durham and west, and the competition at Ottawa to the counties of Peterborough, Northumberland and east. At the Royal the teams competed for the Jeffrey Bull memorial trophy; at Guelph, the Hon. Manning Doherty trophy, and at Ottawa, the Peter White trophy; and as the competitions at Guelph and Ottawa are group competitions, the winners are brought together to compete for the Union Stock Yards trophy, emblematic of the provincial championship, won this year by York county.

## INTER-COUNTY LIVE STOCK JUDGING COMPETITION, HELD AT THE ROYAL WINTER FAIR, NOVEMBER 21, 1922.

| County. | Beef Cattle. | Dairy Cattle. | Sheep. | Swine. | Heavy Horses. | Total. | County Standing |
|---|---|---|---|---|---|---|---|
| Peel | 637 | 744 | 679 | 680 | 690 | 3,430 | 1 |
| Brant | 621 | 726 | 620 | 738 | 695 | 3,400 | 2 |
| York | 616 | 653 | 645 | 624 | 811 | 3,349 | 3 |
| Wentworth | 687 | 713 | 574 | 634 | 707 | 3,315 | 4 |
| Halton | 529 | 754 | 526 | 701 | 777 | 3,287 | 5 |
| Wellington | 692 | 689 | 626 | 589 | 690 | 3,286 | 6 |
| Oxford | 631 | 737 | 628 | 630 | 644 | 3,270 | 7 |
| Durham | 504 | 692 | 635 | 697 | 713 | 3,241 | Tie |
| Norfolk | 526 | 734 | 591 | 697 | 693 | 3,241 | |
| Renfrew | 495 | 691 | 612 | 714 | 719 | 3,231 | 10 |
| Perth | 585 | 671 | 647 | 614 | 684 | 3,201 | 11 |
| Essex | 622 | 712 | 546 | 678 | 640 | 3,198 | 12 |
| Elgin | 584 | 711 | 560 | 566 | 713 | 3,134 | 13 |
| Waterloo | 553 | 628 | 597 | 623 | 710 | 3,111 | 14 |
| Ontario | 490 | 735 | 575 | 553 | 745 | 3,098 | 15 |
| Bruce | 566 | 598 | 539 | 654 | 739 | 3,096 | 16 |
| Grey | 592 | 556 | 587 | 697 | 657 | 3,089 | 17 |
| Welland | 570 | 633 | 573 | 659 | 631 | 3,066 | 18 |
| Lambton | 544 | 625 | 543 | 663 | 674 | 3,059 | 19 |
| Simcoe, South | 505 | 635 | 578 | 735 | 605 | 3,058 | 20 |
| Hastings | 566 | 613 | 522 | 759 | 588 | 3,048 | 21 |
| Middlesex | 570 | 670 | 557 | 552 | 664 | 3,013 | 22 |
| Grenville | 509 | 576 | 557 | 711 | 658 | 3,011 | 23 |
| Lanark | 477 | 696 | 571 | 672 | 559 | 2,975 | 24 |
| Dufferin | 461 | 578 | 529 | 640 | 765 | 2,973 | 25 |
| Leeds | 502 | 732 | 471 | 654 | 610 | 2,969 | 26 |
| Peterborough | 458 | 628 | 591 | 613 | 629 | 2,919 | 27 |
| Huron | 493 | 637 | 475 | 599 | 668 | 2,872 | 28 |
| Carleton | 501 | 573 | 593 | 620 | 580 | 2,867 | 29 |
| Victoria | 516 | 664 | 566 | 615 | 475 | 2,836 | 30 |
| Glengarry | 403 | 663 | 552 | 581 | 632 | 2,831 | 31 |
| Haldimand | 496 | 598 | 475 | 591 | 655 | 2,815 | 32 |
| Simcoe, North | 533 | 621 | 410 | 655 | 578 | 2,797 | 33 |
| Kent | 418 | 552 | 513 | 608 | 593 | 2,684 | 34 |
| Dundas | 493 | 511 | 454 | 607 | 531 | 2,596 | 35 |

## LIVE STOCK JUDGING COMPETITION, OTTAWA WINTER FAIR, JANUARY 17TH AND 18TH, 1923.

| County | Horses | Beef Cattle | Dairy Cattle | Sheep | Swine | Total | Standing |
|---|---|---|---|---|---|---|---|
| Grenville | 511 | 539 | 500 | 493 | 485 | 2,528 | 1 |
| Lanark | 470 | 456 | 431 | 478 | 531 | 2,366 | 2 |
| Northumberland | 464 | 502 | 410 | 425 | 478 | 2,279 | 3 |
| Carleton | 532 | 447 | 406 | 479 | 406 | 2,270 | 4 |
| Leeds | 435 | 459 | 450 | 413 | 466 | 2,223 | 5 |
| Hastings | 421 | 462 | 421 | 496 | 382 | 2,182 | 6 |
| Peterboro | 439 | 445 | 427 | 468 | 256 | 2,035 | 7 |
| Lennox and Addington | 396 | 411 | 405 | 433 | 363 | 2,008 | 8 |
| Dundas | 412 | 357 | 416 | 411 | 332 | 1,928 | 9 |
| Prince Edward | 418 | 288 | 284 | 323 | 350 | 1,663 | 10 |

INTER-COUNTY LIVE STOCK JUDGING COMPETITION HELD AT GUELPH WINTER FAIR, DECEMBER 12TH 1922.

| County | Horses | Beef Cattle | Dairy Cattle | Sheep | Swine | Total |
|---|---|---|---|---|---|---|
| York | 428 | 524 | 461 | 454 | 333 | 2,200 |
| Waterloo | 474 | 447 | 430 | 341 | 443 | 2,135 |
| Perth | 473 | 403 | 422 | 480 | 346 | 2,124 |
| Wellington | 329 | 484 | 467 | 352 | 435 | 2,067 |
| Peel | 462 | 464 | 447 | 296 | 362 | 2,031 |
| Wentworth | 411 | 415 | 446 | 400 | 340 | 2,012 |
| Bruce | 415 | 387 | 366 | 416 | 408 | 1,992 |
| Middlesex | 376 | 490 | 380 | 315 | 406 | 1,967 |
| Ontario | 396 | 456 | 434 | 348 | 313 | 1,947 |
| Durham | 392 | 404 | 432 | 304 | 410 | 1,942 |
| Essex | 404 | 383 | 386 | 413 | 346 | 1,932 |
| Oxford | 475 | 423 | 429 | 322 | 282 | 1,931 |
| Haldimand | 323 | 452 | 329 | 444 | 367 | 1,915 |
| Kent | 349 | 399 | 379 | 348 | 405 | 1,880 |
| Halton | 293 | 387 | 431 | 358 | 384 | 1,853 |
| Huron | 314 | 420 | 422 | 288 | 392 | 1,836 |
| Simcoe South | 408 | 353 | 374 | 355 | 341 | 1,831 |
| Brant | 348 | 366 | 394 | 331 | 347 | 1,786 |
| Grey | 342 | 392 | 344 | 393 | 288 | 1,759 |
| Victoria | 377 | 395 | 394 | 280 | 292 | 1,739 |
| Simcoe North | 418 | 407 | 292 | 269 | 341 | 1,727 |
| Elgin | 325 | 356 | 346 | 404 | 289 | 1,720 |
| Norfolk | 297 | 340 | 408 | 350 | 310 | 1,705 |
| Lincoln | 350 | 367 | 269 | 311 | 326 | 1,623 |
| Lambton | 295 | 342 | 368 | 252 | 314 | 1,571 |
| Welland | 305 | 392 | 350 | 173 | 277 | 1,497 |

## Championship Judging Competition.

The winners of the Doherty trophy at the Guelph Winter Fair and the White trophy at the Ottawa Winter Fair competed for championship honours on March 14th and 15th, 1923, at London and vicinity in Middlesex county, for the handsome silver trophy offered by the Union Stock Yards, Toronto.

The following classes of stock were judged:—

| | | |
|---|---|---|
| Dairy Cattle: | *Jerseys* | John Pringle, London. |
| | *Holsteins* | Ontario Hospital Farm, London. |
| Beef Cattle: | *Angus* | Col. Robt. McEwen, Byron. |
| | *Shorthorns* | C. J. Shore, Glanworth. |
| Heavy Horses: | *Clydesdales* | Simms Brothers, Thamesford. |
| | *Percherons* | Lafayette Stock Farms, London. |
| Sheep: | *Southdowns* | Col. Robt. McEwen, Byron. |
| | *Cotswolds* | C. J. Shore, Glanworth. |
| Swine: | *Yorkshire*, Bacon Hogs | Col. Robt. McEwen, Byron. |
| | *Yorkshire*, Brood Sows | Ontario Hospital Farm, London. |

The following is the score, showing York county leading by 247 points out of a possible 3,000:—

| | Horses | Beef | Dairy | Sheep | Swine | Total |
|---|---|---|---|---|---|---|
| York | 502 | 490 | 519 | 535 | 515 | 2,561 |
| Grenville | 383 | 446 | 490 | 535 | 460 | 2,314 |

The teams and coaches were as follows:—

*York County.*
R. J. Rogers, Newmarket, Agricultural Representative.

Team: J. Kennedy, Agincourt.
R. Baycroft, Aurora.
*T. Hastings, Markham.

*Grenville County.*
W. M. Croskery, Kemptville Agricultural Representative

Team: R. J. Kelso, Spencerville.
Stanley Ralph, Brockville.
Willard Shannon, Domville.

* Owing to T. Hastings being on a Jury, Mr. Lambert Wilson, Aurora, acted as spare and judged Dairy Cattle, Swine and Horses.

The Union Stock Yards paid all expenses of the competing teams, and gave a banquet in their honour, at which function the trophy was presented to York county. Since this is York's third win on the trophy, it now becomes their permanent property.

### Judging Competitions at Exhibitions.

The Canadian National (Toronto), Central Canada (Ottawa), and Western (London), fairs continue to offer substantial prizes for individual livestock judging competitions. At Toronto, the judging competition is extended to include poultry, roots and grain, and fruits and vegetables. These competitions are conducted on the same lines as the inter-county judging competitions except that the prizes offered are for individual standing only. In these individual competitions contestants are permitted to enter in two classes only.

The cash prizes offered and the number of entries at the different exhibitions were as follows:—

Toronto—Prizes, $1,500; number of entries, 318.
Ottawa—Prizes, $495; number of entries, 116.
London—Prizes, $170; number of entries, 188.

Judging competitions were conducted in a smaller way in connection with many of the Agricultural Society fall fairs throughout the province, but figures as to the amount of prize money offered or the number of entries are not available.

### Profit Competitions.

Junior Farmers' profit competitions were conducted during 1922 as follows:—

| | | | | | | |
|---|---|---|---|---|---|---|
| Acre | Profit | Competitions | with | Oats | Number | 11 |
| " | " | " | " | Barley | " | 1 |
| " | " | " | " | Potatoes | " | 9 |
| " | " | " | " | Seed Corn | " | 1 |
| " | " | " | " | Silage | " | 4 |
| " | " | " | " | Mangels | " | 2 |
| " | " | " | " | Turnips | " | 0 |
| Dairy Profit Competitions | | | | | " | 3 |
| Baby Beef Competitions | | | | | " | 6 |
| Feeding Hogs for Profit | | | | | " | 17 |
| Steer Feeding | | | | | " | 2 |
| Total Number of Competitions | | | | | | 56 |

As in the past, these competitions were open to junior farmers under thirty years of age. The average age of competitors was about twenty, who had not won a prize in the same competition in previous years, and the prize included transportation, board and lodging while attending one of the two weeks' short courses at the Ontario Agricultural College at Guelph, or the short course in agriculture at the Kemptville Agricultural School. Forty-two winners in the various competitions were supplied with transportation to Guelph, and fourteen with transportation to Kemptville.

### Acre-Profit Competitions.

The junior farmers entering the acre-profit competitions decided amongst themselves what crop they would grow, and the prize was awarded to the one showing the largest net profit after deducting rent for land, cost of seed, cost of fertilizer, and labour costs for plowing, cultivating, seeding and harvesting from the total value of the crop produced.

In calculating the cost of production and profit in the various profit competions, the following values were used:—

1. *Man and Horse Labour:*
   Man labour to be reckoned at 25c. per hour.
   Horse labour to be reckoned at 15c. per hour.

2. *Fertilizer:*
   Barnyard manure applied to this crop at $1.00 per ton of two horse-load.
   Barnyard manure applied to previous crops at 50c. per ton of two-horse load.
   Commercial fertilizer applied to this crop at one-half of cost price.

3. *Rent of Land:*
   To be computed on the basis of eight per cent. of the selling value of the land, this to be figured by the Representative and the Junior Farmers' Improvement Associations.

| *Value Seed Used in Planting* | | *Value Product Harvested* | |
|---|---|---|---|
| Turnips | $1.00 per lb. | $0.12½ per bushel. | |
| Mangels | .50 " | .12½ | " |
| Potatoes | 1.25 per bushel. | .70 | " |
| Spring Wheat | 2.25 " | .95 | " |
| Oats | 1.10 " | .40 | " |
| Barley | 1.20 " | .60 | " |
| Field Beans | 4.00 " | 3.75 | " |
| Field Peas | 3.50 " | 2.00 | " |
| Corn for Seed | 2.00 " | .80 | " |
| Corn for Silage | 1.75 " | 5.00 " ton | |

ACRE PROFIT COMPETITIONS, 1922.

| County and Winner | Yield in bushels per acre | Value | Cost of production | Profit or Loss |
|---|---|---|---|---|
| *Oats.* | bush. | | | |
| SOUTH SIMCOE: | | | | |
| C. A. Hall, Alliston | 66 | $26 40 | $17 09 | $9 31 Profit. |
| FRONTENAC: | | | | |
| Russel Moreland, Sunbury | 75 | 30 00 | 22 24 | 7 76 " |
| Gordon Gates, Kingston, R.R. 1 | 73 | 29 20 | 21 46 | 7 74 " |
| WELLAND: | | | | |
| Orbin L. Daboll, Fenwick, R.R. 3. | 59 | 23 60 | 16 83 | 6 77 " |
| LENNOX AND ADDINGTON: | | | | |
| Theodore Wagar, Centreville | 55 | 22 00 | 15 58 | 6 42 " |
| BRUCE: | | | | |
| Alex. G. Watson, Lucknow, R.R. 6 | 62 | 24 80 | 18 96 | 5 84 " |
| HASTINGS: | | | | |
| Lee Ketcheson, Holloway | 60 | 24 00 | 18 69 | 5 31 " |
| LINCOLN: | | | | |
| Wm. G. Lounsburg, Smithville, R. R. No. 3 | 59.5 | 23 80 | 18 61 | 5 19 " |
| LAMBTON: | | | | |
| Fred Donald, Thedford, R.R. 3 | 54.8 | 21 92 | 18 00 | 3 92 " |
| PRESCOTT AND RUSSELL: | | | | |
| Jean Charbonneau, Alfred R.R. 1. | 56 | 22 40 | 20 49 | 1 91 " |
| KENORA: | | | | |
| George C. Lyle, Oxdrift | 45 | 18 00 | 19 70 | 1 70 Loss |
| *Barley.* | | | | |
| HASTINGS: | | | | |
| Gilbert Sills, Holloway | 42 | 25 20 | 16 93 | 8 27 Profit |
| *Potatoes.* | | | | |
| RAINY RIVER DISTRICT: | | | | |
| A. E. Gamsby, Stratton | 473 1–3 | 331 33 | 66 33 | 265 00 " |
| THUNDER BAY—PORT ARTHUR: | | | | |
| Wm. G. Wilson, Port Arthur | 455 | 318 50 | 59 73 | 258 77 " |

ACRE PROFIT COMPETITIONS, 1922—*Continued.*

| County and Winner | Yield in bushels per acre | Value | Cost of production | Profit or Loss |
|---|---|---|---|---|
| *Potatoes.—Continued* | bush. | | | |
| NIPISSING DISTRICT: | | | | |
| Stanley E. Anderson, Powassan, R. R. No. 1 | 500 | 350 00 | 97 58 | 252 42 Profit |
| RAINY RIVER DISTRICT: | | | | |
| John A. Martin, Shenston | 376 2–3 | 263 66 | 91 42 | 172 24 " |
| THUNDER BAY—FORT WILLIAM: | | | | |
| Harold Hutchison, Fort William, R. R. No. 1 | 304 | 212 80 | 47 75 | 165 05 " |
| GRENVILLE: | | | | |
| Wm. H. Connerty, Kemptville R. R. No. 5 | 229 1–2 | 160 65 | 55 28 | 105 37 " |
| SIMCOE SOUTH: | | | | |
| Reaford Long, Cookstown, R. R. 4 | 223 1–2 | 156 45 | 54 84 | 101 61 " |
| WELLINGTON: | | | | |
| Henry Wheeler, Orton | 242.2 | 170 94 | 82 03 | 88 91 " |
| SUDBURY DISTRICT: | | | | |
| Pierre Carron, Chelmsford | 141 | 98 70 | 31 81 | 66 89 " |
| *Corn for Silage* | tons | | | |
| MANITOULIN: | | | | |
| Ray Hulton, Silver Water | 21.28 | 106 40 | 17 75 | 88 65 " |
| LINCOLN: | | | | |
| John Williams, Beamsville R. R. 2 | 23.3 | 116 50 | 34 47 | 82 03 " |
| NORFOLK: | | | | |
| Cecil Louch, Clear Creek | 17 | 85 00 | 31 15 | 53 85 " |
| KENT: | | | | |
| Lorne Campbell, Blenheim R.R. 4 | 6.15 (Kent corn weighed | 30 75 | 22 74 after curing) | 8 01 " |
| *Corn for Seed* | | | | |
| ESSEX: | bush. | | | |
| Walter McMurren, S. Woodslee R. R. No. 2 | 47 | 37 48 | 18 47 | 19 02 " |
| *Mangels* | | | | |
| DURHAM: | | | | |
| H. Earl Osborne, Newcastle | 2090 | 261 25 | 51 82 | 209 43 " |
| PERTH: | | | | |
| Leslie Gourlay, St. Marys R.R. 5. | 914 | 114 25 | 49 51 | 64 74 " |

## DAIRY PROFIT COMPETITION.

The prize in this competition, as in the acre-profit competition, was awarded to the contestant showing the greatest net profit, which was determined by deducting the cost of feed and pasture from the value of the butter-fat and skimmed milk. The competition extended over a period of seven months, commencing in the spring of 1922. In computing results, butter-fat was valued at 39c. per pound for March, 40c. for April, 35c. for May, 33c. for June, 34c. for July, 33c. for August, 34c. for September, 34c. for October, and 35c. for November. Skim-milk was valued at 30c. per hundred pounds. Feed and pasture were valued as follows:—

| | | | |
|---|---|---|---|
| Ground Oats | $38 00 per ton | Shorts or Middlings | $34 00 per ton |
| Barley | 40 00 " | Oil Cake | 60 00 " |
| Ground Peas | 80 00 " | Cotton Seed Meal | 65 00 " |
| Ground Rye | 72 50 " | Gluten Feed | 42 00 " |
| Ground Wheat | 58 00 " | Low grade flour or red dog | 40 00 " |
| Ground Corn | 38 00 " | Tankage | 55 00 " |
| Corn on Cob | 22 00 " | Hay | 23 00 " |
| Bran | 32 00 " | Alfalfa | 25 00 " |

| | | | |
|---|---|---|---|
| Straw | 7 50 per ton | Skim Milk | 6 00 per ton |
| Silage | 5 00 " | Buttermilk | 4 75 " |
| Roots | 5 00 " | Whey | 3 00 " |
| New Milk | 35 00 " | Green Feed | 2 00 " |
| | | Pasture | 1 00 " mth. |

DAIRY PROFIT COMPETITION, 1922.

| County and Winner | Value of Feed | Milk Lbs. | % Fat | Lbs. Fat | Value | Lbs. Skim Milk | Value of Skim Milk | Net Profit |
|---|---|---|---|---|---|---|---|---|
| DUNDAS: | | | | | | | | |
| Frank Miller, Inkerman | $27 89 | 12,312 | 3 25 | 398 86 | $142 58 | 11,913.14 | $35 72 | $150 41 |
| PRESCOTT & RUSSELL: | | | | | | | | |
| Fernand Lalonde, Clarence Creek | 40 46 | 8,476 | 3.5 | 299 39 | 103 20 | 8,176.06 | 24 51 | 87 25 |
| BRANT: | | | | | | | | |
| Clifford Chant, Cathcart | 75 15 | 10,260 | 3.4 | 303 43 | 103 67 | 9,956.87 | 29 87 | 58 39 |

## BABY BEEF COMPETITION.

The baby beef competition differs from the acre-profit and dairy-profit competition in that net profit is not the main consideration, as the awards are made on the basis of 75 points for quality and finish of the animal and 25 points for net profit. The calves entered in this competition were born after September 1st, 1921, and the competition concluded in November, 1922, when the animals were scored for quality and finish. In determining the net profit in this competition, the baby beeves were valued at 12c. per pound, and the feeds consumed as follows: Pasture, 75c. per month; nurse cow, $6 per month; hay, grain and other concentrates as for the dairy-profit competition.

BABY BEEF COMPETITION, 1922.

| County and Winner | Date of Birth | Weight of Steer | Value | Cost of feed consumed and initial cost of animal | Net Profit | Score |
|---|---|---|---|---|---|---|
| HURON: | | | | | | |
| Wm. Lyons, Lucknow R.R. 1 | Sept. 25, 1921 | 950 | $114 00 | $91 34 | $22 66 | 95.3 |
| PEEL: | | | | | | |
| Harry Laughlin, Alton R.R. 1 | Sept. 9, 1921 | 976 | 117 12 | 98 97 | 18 15 | 90.25 |
| LAMBTON: | | | | | | |
| J. C. Walden, Thedford, R.R. | Jan. 31, 1922 | 850 | 102 00 | 74 56 | 27 44 | 85. |
| BRUCE: | | | | | | |
| Ed. G. Harrison, Ripley, R.R. 2. | Sept. 8, 1921 | 915 | 109 80 | 38 84 | 74 96 | 83.8 |
| WELLINGTON: | | | | | | |
| Irwin Kopas, Elora, R.R. 3 | Jan. 5, 1922 | 880 | 105 60 | 83 33 | 22 27 | 81.4 |
| BRUCE: | | | | | | |
| C. Wilfrid Grant, Paisley | Dec. 9, 1921 | 728 | 87 36 | 24 98 | 62 38 | 79 |

## Steer-Feeding Competitions.

Steer-feeding competitions were conducted by junior farmers for the first time in 1922, two competitions being conducted under the following rules:—

1. The winner will be decided on the following basis:
   30% for highest gain in weight.
   40% for lowest cost per cwt. of gain.
   30% for value of steer when finished.
2. Each contestant shall feed and care for two steers over one year of age at time of entering competition.
3. A third steer may be fed and carried as a substitute but such substitution shall be made only in case of accident and then only with the approval of the Agricultural Representative.
4. The feeding period shall commence during the month of November and much continue for five months from date of commencement.
5. Contestants must notify the Agricultural Representatives at least ten days before they are ready to commence operations, in order that the steers may be inspected and weighed.
6. Steers to be starved not more than twelve hours before being weighed at commencement of competition and at the conclusion of the competition the animals are to be weighed out, fed and watered as is the common practice commercially.
7. The Agricultural Representative shall be responsible for weighing the steers on entering the competition and again on completion of the contest.
8. There must be six entries and at least four complete the contest or no prize will be awarded. If there are twelve entries and eight complete the contest, two prizes will be awarded.
9. At the conclusion of the competition, each competitor shall prepare a report giving the following information:
   (a) How the steers were bred.
   (b) The total and if possible the monthly gains in weight.
   (c) The method of feeding.
   (d) The kinds and amount of feeds used.
   (e) The cost per cwt. of gain.
   (f) Any other information that may be of value.
10. Each contestant must satisfy the Agricultural Representative as to the accuracy of his report and all reports must reach the Agricultural Representative on or before the first of June.

STEER FEEDING COMPETITIONS, 1922.

| County and Winner | Weight at beginning of feeding period (2 steers) | Weight at finish of feeding period (2 steers) | Gain in weight (2 steers) | Cost of feed | Cost of feed per 100 lbs. gain in weight | Score |
|---|---|---|---|---|---|---|
| | Lbs. | Lbs. | Lbs. | | | |
| Bruce: Wilfrid R. Thompson, Paisley R.R. 3..... | 1,839 | 2,391 | 552 | $56 55 | $10 24 | 84 |
| Bruce: Wesley N. Howe, North Bruce..... | 2,090 | 2,430 | 340 | 44 03 | 12 95 | 82.8 |

## Feeding Hogs for Profit Competition.

Prizes in the feeding hogs for profit competitions were awarded on the same basis as in 1921, namely, 60 points for highest net profit per cwt. of gain, 20 points for the best kept records, and 20 points for greatest gain in weight except that for light or heavy hogs. Two points were deducted for every five pounds under 160 or over 210 pounds. Contestants were required to feed a pen of four bacon hogs from six weeks of age until finished for market, and not more than twenty-eight weeks of age. In computing net profit per cwt. of gain, hogs were valued at $12.32 per cwt., and the feeds consumed as follows:—

Pasture, $1.00 per hog. Grain and other concentrates as for dairy-profit competition.

## FEEDING HOGS FOR PROFIT COMPETITION, 1922.

| County and Winner | Length of Feeding Period | Average Weight of Hogs Alive when marketed | Average Gain in Weight from six weeks of age | Value per Hog of Gain in Weight | Average Cost of Feed per Hog | Average Net Profit per Hog | Average Net Profit per cwt. gain |
|---|---|---|---|---|---|---|---|
| GRENVILLE: Paul Kingston, Domville, R.R. 1... | May 21-Aug. 31 102 days | 195 | 160 | $19 71 | $5 68 | $14 02 | $8 76 |
| BRUCE: Russell E. Grant, Paisley..... | May 26-Sept. 22 119 days | 212½ | 197½ | 24 33 | 7 29 | 17 04 | 8 63 |
| WELLAND: Archie Youngblutt, Ridgeville, R. R. No. 1..... | May 15-Aug. 29 106 days | 171 | 141 | 17 37 | 6 60 | 10 77 | 7 64 |
| SUDBURY DISTRICT: Carl Withers, Walford..... | May 19-Sept. 26 130 days | 184½ | 158½ | 19 52 | 7 41½ | 12 11 | 7 64 |
| HALDIMAND: E. W. Schweyer, Jarvis, R. R. 3.... | April 13-Sept. 2 142 days | 211 | 186 | 22 91 | 8 85 | 14 06 | 7 55 |
| DUNDAS: Harold V. Campbell, Farran's Point, Ro.R. No. 1..... | April 28-Sept. 11 136 days | 183¾ | 163¾ | 20 17 | 7 89 | 12 28 | 7 50 |
| SOUTH SIMCOE: C. M. Carscadden, Bradford..... | May 30-Nov. 7 161 days | 192½ | 154½ | 19 04 | 7 75 | 11 29 | 7 30 |
| VICTORIA: Vernon Lang, Omemee, R.R. 2..... | May 13-Aug. 24 103 days | 191¼ | 165¼ | 20 36 | 8 79 | 11 56 | 7 00 |
| LENNOX AND ADDINGTON: Milo Jackson, Enterprise, R.R. 2... | March 27-Aug. 5 131 days | 195 | 175 | 21 56 | 9 39 | 12 17 | 6 95 |
| PERTH: Bert F. Stacey, St. Marys, R.R. 1.. | June 16-Oct. 13 119 days | 197½ | 163 | 20 08 | 8 80 | 11 28 | 6 92 |
| HURON: Jas. Breckenridge, Bluevale, R.R. 1 | April 28-Sept. 2 127 days | 192½ | 170½ | 21 00 | 9 45 | 11 55 | 6 78 |
| LAMBTON: Gordon A. Elliott, Thedford..... | April 28-Sept. 19 144 days | 200 | 158 | 19 40 | 8 77 | 10 63 | 6 75 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BRUCE: | | | | | | | |
| Henry Farrell, Ripley R.R. 2..... | June 20-Nov. 15 148 days | 228¾ | 200¾ | 24 73 | 11 37 | 13 36 | 6 65 |
| ESSEX: | | | | | | | |
| Donald D. Smith, Woodslee, R.R. 4 | June 8-Oct. 19 133 days | 185¾ | 156¼ | 19 25 | 8 91 | 10 34 | 6 61 |
| FRONTENAC: | | | | | | | |
| Fred Lindsay, Inverary, R.R. 1..... | Mar. 29-Sept. 12 167 days | 207½ | 187½ | 23 10 | 11 44 | 11 66 | 6 22 |
| DURHAM: | | | | | | | |
| Harry I. Leyman, Cavan, R.R. 1... | May 11-Nov. 7 150 days | 191½ | 141 | 17 37 | 10 28 | 7 09 | 5 03 |
| RAINY RIVER DISTRICT: | | | | | | | |
| Harry McCool, Devlin..... | June 24-Dec. 15 174 days | 203½ | 171½ | 21 13 | 12 67 | 8 46 | 4 93 |

## Junior Farmers in Athletics.

The junior farmers of Ontario during the past two or three years have given considerable attention to the development of wholesome recreation in their respective districts, and as a result a number of junior farmers' baseball leagues and athletic field days have been organized. The value of organized recreation as a means of alleviating the arduous routine of life on the farm cannot be over-estimated. The young people in the rural sections appreciate the opportunity afforded for developing community pride and community spirit as well as friendly inter-community competition. As a result of local or county field days, junior farmers' inter-county field days were held at Brampton for Western Ontario and at Kemptville for Eastern Ontario during the summer of 1922. Teams of junior farmers and junior Womens' Institute members from different counties attended these two field days in large numbers and entered very enthusiastically into the various games and sport events. In addition to the recreation, the development of athletics and the honour of winning the field days provided an excellent opportunity for junior farmers and junior Women's Institute members from different sections to become acquainted and familiar with one another's activities. The first attempt at conducting junior farmers' field days was so successful and beneficial that arrangements are being made to continue them and extend athletic associations and organized recreation during 1923.

## Boys' and Girls' Club Work.

Boys' and Girls' Club work in Ontario continues to develop steadily, nineteen new clubs with a membership of 287 being organized during 1922. In addition to the new clubs organized, the membership in some of the older clubs was increased, by purchasing pure-bred stock for boys and girls who wished to take up club work, but who were too young or not in a position to join at the time the club was organized. The livestock breeders, and breed associations, have always supported and encouraged club work and during the past year have taken an active part. The Jersey Cattle Breeders' Association, through their field man, has co-operated with the Agricultural Representatives in organizing Jersey Calf Clubs in Elgin, Norfolk, Brant and York counties.

Boys and girls starting in club work are always very enthusiastic and expect to secure animals superior to those on the home farms. It is, therefore, very important for the success of any livestock club organized, that the animals purchased be good individuals of the breed, and uniform, in order to retain the enthusiasm of the members and avoid disappointments.

The following Boys' and Girls' Clubs were organized during 1922:—

BOYS' AND GIRLS' CLUB WORK.

| County | Name of Club | Date of Organization | Member-ship | Age of Members | Breed of Live Stock | Average age of Live Stock | Cost | Date of Distribution |
|---|---|---|---|---|---|---|---|---|
| PIG CLUBS— | | | | | | | | |
| Dufferin | Mulmur Twp. Pig Club | 1922 | 7 | ..... | ..... | ..... | ..... | ..... |
| Frontenac | Kingston Boys' and Girls' Pig Club | 1922 | 10 | ..... | ..... | ..... | ..... | ..... |
| Grenville | Grenville Boys' and Girls' Pig Club | 1922 | 20 | 14 | Yorkshire | 6 weeks | ..... | ..... |
| Halton | Halton Boys' and Girls' Pig Club | 1922 | 12 | ..... | ..... | ..... | ..... | ..... |
| Hastings | West Huntingdon Boys' and Girls' Pig Club | Mar. 1922 | 20 | 12-16 | Tamworth and Yorkshire | | | |
| Huron | Colborne Boys' and Girls' Pig Club | 1922 | 16 | ..... | ..... | ..... | ..... | ..... |
| Lennox and Addington | Odessa Pig Club | 1922 | 14 | 10-18 | ..... | ..... | ..... | ..... |
| Peel | Bolton Pig Club | 1922 | 14 | ..... | ..... | ..... | ..... | ..... |
| Peterborough | Otonabee Pig Club | 1922 | 12 | ..... | ..... | ..... | ..... | ..... |
| Victoria | Woodville | 1922 | 20 | 10-17 | ..... | ..... | ..... | ..... |
| | Oakwood | 1922 | 10 | 10-15 | ..... | ..... | ..... | ..... |
| Wentworth | Wentworth Pig Club | 1922 | 14 | 15 | ..... | ..... | ..... | ..... |
| York | York County Boys' and Girls' Pig Club | 1922 | 15 | ..... | ..... | ..... | ..... | ..... |
| Carleton | Pierce's Corners | 1922 | 10 | (Not organized in co-operation with the Federal Branch) | | | | |
| CALF CLUBS— | | | | | | | | |
| Algoma | Sault Boys' Holstein Breeders Club | March 25,1922 | 13 | 15-21 | Holstein | 2-3 yrs. | $75—$225 | May 10 |
| Bruce | South Bruce Boys' Breeders Club | March 1922 | 13 | 12-25 | Shorthorns | 3 yrs. | $160 | April 15 |
| Elgin | Jersey Calf Club | ..... | 50 | ..... | ..... | ..... | $75—$100 | ..... |
| Norfolk | Norfolk Calf Club | Spring 1922 | 12 | 12-18 | Jerseys | 6 mths. | $75 | May |

## Pig Clubs.

During 1921, a number of Pig Clubs were organized by the Representatives under the Boys' and Girls' Pig Club policy of the Dominion Department of Agriculture. Unfortunately, owing to various difficulties encountered, only two of these clubs completed their work and shipped car lots of hogs to Toronto, and only ten members took part in judging competition at the stock yards. This work was carried on again in 1922 when ten clubs were organized. Eight clubs completed the season's programme and shipped carloads of hogs to the Toronto Union Stock Yards for the car-lot competition, and sixty-one boys took part in the club members' swine-judging competition.

These clubs were in reality community feeding and marketing organizations for boys and girls, the objects being to stimulate a community interest in swine-raising, to provide a greater knowledge of marketing methods and to supply information and training in feeding and management. Club members were required to feed not less than two nor more than six hogs and at marketing time contribute their quota to the club's carload for the car-lot competition. A number of clubs failed to complete their programme due to the difficulty in securing young pigs of sufficiently near the same age to be uniformly finished and within bacon weights at the date set for marketing in the fall. One or two clubs completed their feeding programme but had their hogs up to bacon weights some time before the date set for marketing, and having to sell early were unable to take part in the car-lot competition.

Most of the Pig Clubs were able to arrange to have prizes offered at the agricultural or school fairs for a pair of bacon hogs by club members. Where this was done, the Dominion Department of Agriculture gave a grant of one-third of the prize money paid. The prizes for the carload and judging competition at the stock yards were paid by the Dominion Department of Agriculture.

The carload competition was held at the Union Stock Yards, Toronto, on October 18th, and after the awards had been made, the hogs were sold by auction. The following table gives the results of the car-lot competition and the price received:—

PIG CLUB DAY, OCTOBER 18TH, 1922.

| County | Agric. Rep. | Name of Club | No. of Members | No. of Hogs Shipped to Market | Originally | No. of Contestants in Judging Contest | Standing in Carload Competition | Selling Price. |
|---|---|---|---|---|---|---|---|---|
| Halton | R. R. Fleming, Milton | Halton Boys' and Girls' Club | 12 | 68 | 74 | 10 | 1st. | $14 10 Gunns. |
| York | R. J. Rogers, Newmarket | York County Boys' and Girls' Club | 16 | 65 | 80 | 15 | 2nd. | 13 75 Davies. |
| Huron | S. B. Stothers, Clinton | Colborne Pig Club | 15 | 66 | 71 | 3 | 3rd. | 13 00 Harris. |
| Victoria | A. A. Knight, Lindsay | Woodville Pig Club | 20 | ..... | ..... | ..... | ..... | ..... |
| | | Mariposa Pig Club | 10 | 60 | 85 | 12 | 4th. | 12 85 Davies. |
| Grenville | W. M. Croskery, Kemptville | Grenville Boys' and Girls' Pig Club | 21 | 57 | 76 | ..... | 5th. | 12 25 Swifts. |
| Wentworth | W. G. Marritt, 18 Market St., Hamilton, Ont. | North Wentworth Pig Club | 15 | 38 | 80 | 7 | 6th. | 12 60 Gunns. |
| Peel | J. A. Carroll, Brampton | Bolton Pig Club | 14 | 40 | 72 | 6 | 7th. | 13 05 Can. Pac. Co. |
| Lennox and Addington | C. C. Main, Napanee. | Odessa Pig Club | 14 | 48 | 83 | 8 | 8th. | 11 60 Harris. |

## Boys' Cattle-Breeding Clubs.

Three Cattle-Breeding Clubs were organized in Ontario in 1922, by the Agricultural Representatives in Algoma District and Brant and Bruce counties, under the policy of the Live Stock Branch of the Dominion Department of Agriculture for assisting Boys' and Girls' Cattle-Breeding Clubs. The objects of these clubs, which are clearly stated in the recommended constitution, shall be to increase the ultimate profits of the cattle industry:—

(1) By stimulating and promoting interest on the part of farm boys in the breeding, feeding, and marketing of good cattle.
(2) By encouraging a closer study of production and marketing cost with a view to eliminating wasteful and unproductive methods and to realizing the highest net returns from the product marketed.
(3) By demonstrating the importance of maintaining a proper balance between individuality and productive capacity in appraising breeding stock.
(4) By increasing the commercial value of the cattle of the country through wider distribution of good breeding stock.
(5) By increasing the value of the cattle of the country through the principle of community breeding.
(6) By providing a means of demonstrating the importance of proper feeding and management in developing and thereby increasing the value of young breeding stock.

The Live Stock Branch of the Dominion Department of Agriculture co-operated with the Live Stock Branch of the Ontario Department of Agriculture in purchasing the stock for distribution to members of the three clubs organized. The Federal Department of Agriculture, in connection with their policy of assisting clubs, offered substantial prizes in co-operation with Fall Fair Associations for exhibits by club members at local fairs.

In Algoma District, the Sault Ste. Marie Boys' Holstein Breeders' Club was organized with thirteen members, and bred Holstein heifers were distributed. In Brant county, the Boys' Holstein Breeders' Club was organized with twelve members, and, as in the case of the Algoma Club, Holstein heifers due to freshen for the first time were distributed. In Bruce county, the South Bruce Boys' Breeders' Club was organized with thirteen members, and Shorthorn females averaging three years of age were distributed.

## Potato Demonstrations.

Potato demonstrations to test the best source from which to obtain good seed potatoes have been carried on for the past five years in certain specialized potato districts of the province. That good seed plays a most important part in the production of this vegetable has been known and appreciated for a long time by market gardeners and others who have to grow potatoes at a profit on high-priced land, and they know only too well that poor seed usually means a direct loss to them.

There are certain diseases, such as leaf roll and mosaic of potatoes, which are carried over winter in the seed, and although they cannot be seen in the seed and do not affect the table or keeping qualities of the potato in the slightest, will nevertheless produce a plant which will yield only from a third to one-half the marketable tubers that it would do if healthy. It can be seen, therefore, that it is important to obtain seed as free from these diseases as possible to get good yields. These diseases usually show up quite distinctly in the field during the growing season and they should be rogued out of the seed growers' fields at that time to prevent their spread and multiplication.

The seed used in all demonstration plots was Northern Ontario, Maritime Provinces, and Ontario selected certified seed. The varieties used were Irish Cobbler, Green Mountain, and Dooley, the three best known standard types in Ontario.

The Horticultural Department of the O.A.C., Guelph, attended to the treating of the seed and the planting and staking out of the different plots. The Agricultural Representatives, co-operating with the growers on whose land the plots were grown, attended to the spraying, cultivating, harvesting and final weighing. During the growing season all the plots were visited and an inspection made for diseases by the staff of the Department of Botany, Ontario Agricultural College, Guelph. The following tables give details of the yield in bushels per acre and the percentage of the various diseases from seed secured from Northern Ontario, Old Ontario and the Maritime Provinces in Irish Cobblers and Green Mountains, and from Northern Ontario and Old Ontario in the case of Rural New Yorker (Dooley) during the season of 1922:—

TABLE 1.

| County | Northern Ontario (Percentage) | | | | Maritime (Percentage) | | | | Old Ontario Selected. (Percentage) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Leaf Roll | Mosaic. | Black Leg. | Yield per Acre. | Leaf Roll. | Mosaic. | Black Leg. | Yield per Acre. | Leaf Roll. | Mosaic. | Black Leg. | Yield per Acre. |
| IRISH COBBLERS. | | | | bush. | | | | bush. | | | | bush. |
| Bruce | .... | .... | .5 | 264 | .5 | .... | .... | 228 | 2 | .5 | .5 | 260 |
| Haldimand | .... | .... | .... | 176 | .... | .... | .... | 154 | 1 | .... | .... | 151.8 |
| Hastings | .... | .... | .... | 136 | .... | .... | .... | 121.3 | .5 | .5 | .... | 106.6 |
| Kent | .... | .5 | .... | 193 | .... | .... | .... | 161 | .... | .5 | .... | 140 |
| Middlesex | 1 | .... | .... | 225 | .... | .... | .... | 262.5 | 1.5 | .... | .... | 229.3 |
| Ontario | .5 | 2 | .... | 267.8 | .... | 5 | .... | 251.1 | 1 | .... | .... | 304.7 |
| Peel | .5 | .... | .... | 136.3 | .5 | .... | 1.5 | 117.9 | .... | 1 | .5 | 168.4 |
| *Prince Edward | .... | .... | .... | 197.6 | .... | .... | .... | 241.5 | .... | .... | .... | 255.7 |
| Renfrew | .... | .5 | .... | 274 | .5 | 1 | .... | 258 | 1 | 1 | .... | 300 |
| Welland | .... | 1 | .... | 101.3 | .... | .... | .... | 116.8 | .5 | .... | .... | 88 |
| GREEN MOUNTAINS. | | | | | | | | | | | | |
| Bruce | 1 | .... | .... | 328 | 1 | 1 | .... | 248 | 2.5 | 2 | .... | 272 |
| *Haldimand | .... | .... | .... | 233 | .... | .... | .... | 213.6 | .... | .... | .... | 206.8 |
| Hastings | .... | .... | .... | 144 | .... | 1 | .... | 149.3 | .5 | .5 | .... | 146.6 |
| Kent | .... | .5 | .... | 192 | .... | .5 | .... | 142 | .5 | 1 | .... | 110 |
| Middlesex | .... | .... | .... | 287.5 | .... | .5 | .... | 258.3 | .5 | 1.5 | .... | 291.6 |
| Ontario | .5 | .... | .... | 206 | .... | .5 | .... | 138.2 | .... | .... | .... | 239.8 |
| Peel | .... | 1.5 | .... | 157 | .5 | .5 | .... | 166 | .5 | 10 | .... | 171.5 |
| *Prince Edward | .... | .... | .... | 252.6 | .... | .... | .... | 204.8 | .... | .... | .... | 195 |
| Renfrew | .5 | .... | .... | 244 | 1 | .5 | .... | 266 | 1 | .5 | .... | 298 |
| Simcoe, North | 1 | .... | .5 | 269 | 1 | 1 | .5 | 265 | 1 | .... | .... | 198 |
| Welland | .... | .... | .... | 86.6 | .... | .... | .... | 98.6 | .... | .5 | .... | 104 |

*Inspection for plant diseases not made.

TABLE 2.—RURAL NEW YORKER (DOOLEY).

| County. | Northern Ontario Not Certified. Percentage. | | | | Old Ontario Selected. Certified. Percentage. | | | |
|---|---|---|---|---|---|---|---|---|
| | Leaf Roll. | Mosaic. | Black Leg. | Yield per Acre. | Leaf Roll. | Mosaic. | Black Leg. | Yield per Acre. |
| | | | | bush. | | | | bush. |
| Bruce | .... | .... | .... | 176 | .5 | .... | .... | 208 |
| Haldimand | .... | .... | .... | 200.2 | .... | .... | .... | 215.6 |
| Hastings | .... | .... | .... | 100 | .5 | .... | .... | 96 |
| Kent | .... | .... | .... | 102 | .... | .5 | .... | 142 |
| Middlesex | .... | .... | .... | 179.1 | .... | .... | .... | 233.3 |
| Ontario | .... | .... | .... | 245.4 | 2 | .5 | .... | 256.7 |
| Peel | .... | .... | .... | 138.6 | .5 | .... | .... | 156.4 |
| *Prince Edward | .... | .... | .... | 201.7 | .... | .... | .... | 177.3 |
| Renfrew | 1 | .... | .... | 331 | .... | 1 | .... | 375 |
| Simcoe, North | 1.5 | .... | .... | 244 | 1 | .... | .... | 258 |
| Welland | .... | .... | .... | 142.4 | .... | .... | .... | 133.3 |

*Inspection for plant diseases not made.

A cursory glance at these tables brings out the fact that it is the best practice to plant certified seed either from the North or from a selected district in Old Ontario. The average yields from the certified seed for the past year for Irish Cobblers of 197.1, 191.2, and 200.4 bushels per acre; and for Green Mountains of 218.1, 195.4 and 203 bushels per acre from Northern Ontario, Old Ontario and the Maritime Provinces respectively, are considerably greater than the average yield of 110 bushels per acre for all varieties from the same counties as reported in Crop Bulletin 153, and gives one an idea of the average quality of the seed planted in most districts at present.

It is apparent from the results obtained in the demonstration plots, that just as good seed, and better, can be grown in many parts of Ontario as in the Maritime provinces, providing sufficient care is taken to keep the fields free from diseases and insect pests. Until such time as growers are willing to take the necessary care roguing their fields, treating their seed, and spraying and carefully grading before shipping, in other words, making a business of growing what the markets require (good, clean, vigorous seed of standard varieties, at reasonable prices), the seed from the Maritime Provinces will continue to find a ready sale in Ontario, before the seed grown in this province.

It is interesting to compare the percentage of diseases given for each plot with the yields for same. It will be noted the higher the yield, the less leaf roll and mosaic, and the lower the yield the higher the percentage is of leaf roll and mosaic.

TABLE 3.—Showing the average percentage of Leaf Roll, Mosaic and Black Leg, together with the average yield in bushels per acre of all varieties grown in 1922.

| | Irish Cobblers. Percentage. | | | | Green Mountains. Percentage. | | | | Rural New Yorker (Dooley) Percentage. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Leaf Roll. | Mosaic. | Black Leg. | Yield per Acre. | Leaf Roll. | Mosaic. | Black Leg. | Yield per Acre. | Leaf Roll. | Mosaic. | Black Leg. | Yield per Acre. |
| | | | | bush. | | | | bush. | | | | bush. |
| Northern Ontario | .2 | .4 | .05 | 197.1 | .3 | .2 | .05 | 218.1 | .... | .... | .2 | 187.3 |
| Maritime | .1 | .7 | .1 | 191.2 | .4 | .6 | .05 | 195.4 | .... | .... | .... | ..... |
| Old Ontario Selected | .8 | .4 | .1 | 200.4 | .7 | 1.7 | .... | 203 | .4 | .2 | .... | 204.6 |

TABLE 4.—AVERAGE YIELD IN BUSHELS PER ACRE OF POTATO DEMONSTRATIONS, 1918-1922.

| Number of demonstrations. | Year. | Green Mountains. | | | Irish Cobblers. | | | Rural New Yorker (Dooley) | |
|---|---|---|---|---|---|---|---|---|---|
| | | Northern Ontario. | Maritime. | Old Ontario Selected. | Northern Ontario. | Maritime. | Old Ontario Selected. | Northern Ontario. | Old Ontario. |
| 22 | 1918 | 174.9 | 141.3 | 168.0 | 154.7 | 148.8 | 122.8 | ..... | ..... |
| 24 | 1919 | 169.5 | 168.7 | 166.0 | 131.8 | 107.6 | 120.4 | ..... | ..... |
| 11 | 1920 | 218.3 | 215.7 | 215.8 | 198.0 | 210.1 | 201.1 | 210.7 | 202.3 |
| 12 | 1921 | 182.7 | 166.4 | 170.7 | 155.5 | 48.5 | 146.2 | 132.8 | 146.9 |
| 13 | 1922 | 218.1 | 195.4 | 203 | 197.1 | 191.2 | 200.4 | 187.3 | 204.6 |
| Average | ..... | 192.7 | 177.5 | 184.7 | 167.4 | 161.2 | 158.1 | 176.9 | 184.6 |

In addition to the source of seed demonstrations already outlined, a special set of plots were conducted in a few counties to show the comparison of Old Ontario Dooley certified seed with the common seed grown in the district.

The following table gives the results by counties:—

TABLE 5.—COMPARISON OF DOOLEY CERTIFIED SEED WITH COMMON SEED.

| County. | Dooley Selected Seed. | Common Seed. | |
|---|---|---|---|
| | Yield in Bushels per Acre. | Yield in Bushels per Acre. | Variety. |
| Brant | 208.6 | 206.9 | Green Mountain. |
| Elgin | 200 | 174.6 | Green Mountain. |
| Essex | 124 | 60 | Irish Cobbler. |
| Huron | 185 | 195 | Delaware. |
| Lambton | 119 | 93 | ..... |
| Wentworth | 105 | 65 | Green Mountain. |
| York | 238.5 | 154 | Green Mountain. |
| Average | 168.7 | 135.5 | |

The only comment necessary is to state that the Old Ontario Dooley certified seed out-yielded the common seed by 33.2 bushels per acre.

Demonstration plots of potatoes will be planted in the same number of counties again during 1923 with the object of securing still further information on seed potatoes from different sources and on diseases of the potato crop.

## Hog-Feeding Demonstration.

The Agricultural Representative in Essex county conducted a demonstration in feeding hogs with the object of securing some information in connection with the feeding of lard and bacon-type hogs under Essex conditions. Seven farmers took part in this feeding demonstration, four of whom were junior farmers, competing in the feeding hogs for profit competition. These junior farmers fed lard-type hogs along with the Yorkshires they were feeding in the competition. Twenty-four Yorkshires, eight Yorkshire-Duroc Jersey and thirty-two lard (Duroc and Poland China) hogs were fed in this demonstration.

The following table summarizing results and comments are submitted by the Agricultural Representative:—

| Breeds. | No. | Feeding Period. | Total Gains. | Daily Gains. | Age Finished. | Total Finished Weight. |
|---|---|---|---|---|---|---|
| Yorkshires | 24 | 113 | 133 | 1.28 | 185 days | 176 |
| York-Durocs | 8 | 102 | 168.5 | 1.65 | 183 " | 206 |
| Lard Hogs | 32 | 123 | 148 | 1.25 | 188 " | 182 |

As a result of this feeding work, however, the following points were clearly demonstrated:

1. That the Yorkshire swine under ordinary conditions will not make quite so large daily gains as hogs of the lard type of equally good individuality.

2. That the comparative superior gain made by the lard-type hog is so small that a ten per cent. increase in price for the bacon type hog will far more than counterbalance this gain.

3. That the Duroc-York cross will make average gains almost comparable to Durcos, but that it seems to have no decided advantage over the pure-bred Yorks.

4. That the York hog can be fed by intensive corn-belt methods to attain a weight of 225 pounds in less than six months and under these conditions will make as heavy and rapid gains as a lard type hog.

5. That under these intensive methods of feeding, the Yorkshire will not finish as a bacon hog but will grade in the same classification as the better type of lard hog.

6. That this latter factor will prohibit many of our corn-belt farmers from raising hogs that will grade bacon, regardless of breed, until they readjust their ideas regarding hog production and establish a new ideal type of hog in their minds.

With the foregoing conclusions in mind, other practical tests on a more intensive sale will be conducted during the next year.

### Sunflowers.

Several demonstrations in growing sunflowers for silage have been conducted in the past, particularly in Northern Ontario, and the results show that sunflowers as a rule yield more tons of feed per acre than corn, give good feeding results are much hardier than corn. In connection with the use of sunflowers for silage, the Agricultural Representative from Kenora District reports as follows:—

"Sunflowers for silage have passed the experimental stage for this district, and are now looked upon as a standard crop for silage purposes. Nearly two hundred acres of this crop have been grown this year and cut into the silos. It is quite hardy and resisted the heavy frost which we had in the latter part of June, which cut down practically all the corn. This crop is handled in a much similar manner to what corn is in Old Ontario. It is planted about May 24th, in well prepared and fertilized soil, in rows about 30 inches apart, with the grain drill. It is cultivated during the growing season, harvested in the fall with the ordinary corn binder and put into the silo with the cutting box.

"From most of these silos a great deal of juice was soaked away in past years, and a large amount of this has been overcome this year by cutting a little later, and leaving it in the field a longer time before cutting it into the silo. Some farmers have used partially cured second-crop clover and cut this into the silo at the time of filling. This helped absorb the moisture and it is expected it will improve the quality of the feed. Wherever sunflower silage has been fed, excellent results have been had, expecially with dairy cattle. One settler brought in two carloads of cattle from the west last fall and fed them on sunflower silage, elevator screenings and other roughage about the place. These cattle made very rapid gains and were turned off in the spring at a little better than double the price that was paid for them the fall before. No difficulty was had in getting these cattle to eat ensilage after the first day and no ill effects were noticed from its use, which is rather contrary to what some reports would lead one to believe. These cattle were all stall-fed, which probably accounts for this, as each animal would then receive only its allotted amount and none would get off their feed from overeating."

A variety of other demonstrations and experiments are conducted each year by the Agricultural Representatives, covering such questions as fertilizers, spraying, smut control, mustard spraying, insect control, poultry culling, poultry fattening, handling bees, sheep dipping, and sweet clover. These demonstrations

are conducted according to the local requirements or to demonstrate new methods and practices to people interested in some special line of agricultural endeavour.

### Advisory Agricultural Council.

During the year 1921, the county councils in the counties of Brant, Peel, Prince Edward, Renfrew, and Waterloo appointed Advisory Agricultural Councils to advise and co-operate with the Agricultural Representatives in carrying out the work of the Department of Agriculture in their respective counties. The need for closer co-operation between the people and the office of the Agricultural Representative had been recognized for some time and the Representatives report that this plan of giving local committees responsibility in the planning and carrying into effect the work of the Department in the counties has given very gratifying results. Advisory Agricultural Councils were appointed during 1922 in the counties of Carleton, Elgin, Essex, Frontenac, Grey, Haldimand, Lanark, Ontario, Victoria, Welland and Wentworth, so that at the present time we have sixteen counties with Advisory Councils co-operating with the Agricultural Representatives. In two of the counties the Advisory Councils consist of the Agricultural Section of the Board of Trade or Chamber of Commerce.

The Advisory Agricultural Council meets two or three times a year for the purpose of reviewing past activities, planning work for the future, and advising the Representative regarding the general work being carried on in the county. They have been active in promoting live-stock improvement campaigns, Boys' and Girls' Club work, school fairs, judging competitions, courses in agriculture, and similar lines of work. The success of the Advisory Agricultural Council depends largely upon the ability and initiative of the men appointed, and while some of the councils have not been as active as others, they have all rendered splendid service, and will render greater service as they become more familiar with the work and duties of their office.

### Farm Labour.

There was a general scarcity of farm labour throughout the province last year, and the supply of labourers available fell far short of meeting the demand, particularly for experienced *farm* hands. Farmers from past experience were reluctant about engaging inexperienced men, but were willing to pay satisfactory wages for experienced or partly experienced men. Farmers were apparently under the impression that there would be an abundance of farm labour available, and were, therefore, inclined to delay engaging men until their services were required, with the result that many were disappointed. The situation, however, was not so acute as in former years, and the season's crop was harvested with comparatively small loss from labour shortage.

The prevailing wages paid to farm labourers throughout the province ranged about as follows: Married men, $480.00 to $600.00 per year, cottage included; single men (experienced), $30.00 to $40.00 per month; single men (partly experienced), $25.00 to $30.00 per month; inexperienced men, $15.00 to $20.00 per month; boys, $8.00 to $15.00 per month.

There was a great demand for domestic workers for farm homes, but there were practically no female workers available.

The Agricultural Representative from Lambton county reports that a number of labourers from Holland were placed in that county. This class of labour proved very satisfactory and an effort is being made to have larger numbers brought out from Holland in 1923.

## Farm Drainage.

The attached table shows the number of farm-drainage surveys made by the Agricultural Representatives during the past year and the acreage affected. These surveys are chiefly for small areas or profiles of drains, as the general survey work for drainage purposes is looked after by the Drainage Department of the Ontario Agricultural College.

| County. | Number of Surveys made. | Acres Surveyed. | Number of Profiles made. |
|---|---|---|---|
| Algoma | 2 | 15 | .. |
| Brant | 4 | ... | 4 |
| Bruce | 9 | 460 | 9 |
| Carleton | .. | ... | 12 |
| Dufferin | 1 | 500 | .. |
| Dundas | 1 | 100 | 2 |
| Durham | .. | ... | 2 |
| Elgin | 45 | ... | 41 |
| Grenville | 1 | 25 | 1 |
| Glengarry | 11 | 120 | 11 |
| Grey | 7 | ... | 4 |
| Halton | 9 | 267 | .. |
| Hastings | 8 | 320 | 5 |
| Huron | 3 | 45 | 3 |
| Kenora | 18 | ... | 18 |
| Lanark | 7 | 339 | 3 |
| Lennox and Addington | 2 | 10 | 2 |
| Lincoln | 1 | 12 | .. |
| Muskoka | 1 | ... | .. |
| Middlesex | 11 | 500 | 4 |
| Norfolk | 3 | 80 | 3 |
| Ontario | 3 | ... | .. |
| Oxford | 5 | ... | 5 |
| Peel | 1 | ... | .. |
| Perth | 8 | 453 | 8 |
| Peterborough | 4 | 77 | 4 |
| Prince Edward | 2 | ... | .. |
| Rainy River | .. | ... | 1 |
| Renfrew | .. | ... | .. |
| Simcoe, South | .. | ... | 4 |
| Port Arthur | 1 | 20 | 1 |
| Victoria | .. | ... | 1 |
| Waterloo | 2 | ... | .. |
| Welland | 8 | 200 | 6 |

## Wool Marketing.

As in former years, the Agricultural Representatives have assisted in the co-operative marketing of Ontario's wool crop. They have assisted the farmers by distributing paper twine and shipping sacks, by instructing them in tying and packing their fleeces, and by organizing for carload shipments from central points, thus effecting a considerable saving in freight charges. The Representative for Essex County estimates that the ninety-six farmers who marketed their wool co-operatively, increased their returns by $1,642.00 over what they would have received locally. Fifty thousand pounds of wool from Lambton county and over thirty-five thousand pounds from Ontario county were sold co-operatively last year due largely to the efforts of the Agricultural Representatives in these counties.

### Swine-Marketing Courses.

During the month of December, 1921, the Agricultural Representatives Branch co-operated with the Canadian Swine Breeders' Association, the Live Stock Branch of the Dominion Department of Agriculture, the Live Stock Branch of the Ontario Department of Agriculture, and the Industrial and Development Council of Canadian Meat Packers in conducting a series of swine-marketing courses at the various meat-packing plants throughout the province. The Agricultural Representative and nine junior farmers interested in hog-raising were brought in from each county to the packing plants for a three-day course of instruction, covering all phases of the marketing of bacon hogs and packing-plant products, stressing particularly the requirements of the export market. Judging competitions, with live hogs and dressed carcasses, were conducted in conjunction with these courses. The junior farmers were required to judge market classes of bacon hogs, from the standpoint of their suitability for the production of Wiltshire bacon for the British market. The hogs were then killed and again judged as dressed carcasses for the production of Wiltshire bacon. The counties in the province were divided into six groups for these marketing courses which were held at the meat-packing plants in Ingersoll, Brantford, Toronto (West), Toronto (East), Peterborough, and Hull, Quebec.

These swine-marketing courses were very valuable in giving the junior farmers of the province a training in the requirements of our export bacon market and the type of hog required to meet those requirements.

### Sheep-Improvement Work.

The sheep-improvement work which has been carried on for a number of years in co-operation with the Ontario Sheep Promoters of the Live Stock Branch of the Dominion Department of Agriculture, was continued and extended during the past year. A considerable number of dipping, docking and castrating demonstrations were held in a number of the more important sheep-producing counties. The demonstrations were held in new sections in every case, the results of the previous demonstrations being sufficiently remunerative to induce farmers to continue the work at their own expense. As a result of the dipping demonstrations, the farmers in a number of districts have clubbed together and installed permanent concrete dipping tanks at convenient centres. These community sheep-dipping tanks were quite extensively used, each farmer paying his share of the cost of construction, the total of which seldom exceeds $25.00, and the cost of dipping materials required for his sheep and lambs. At the demonstration in Renfrew, 1,435 lambs were dipped; in Grey, 3,937; and in Lanark, 3,600, and smaller numbers in other counties.

The ram clubs organized in Renfrew and Lanark counties in 1921 continued their work by dipping, docking, castrating and marketing co-operatively their 1922 lamb crop. In Lanark county, a lamb fair and sale was organized where all the lambs produced by the club were exhibited in single and group lots. The lambs were not sold at the sale, as prices offered were not equal to the reserve bid of $10.00 per cwt. placed on them by the sale committee, but were shipped to Toronto where they were sold for an average price of about $12.15 per cwt. The Renfrew Club made a similar shipment of 211 lambs to Toronto, which sold for $12.75 per cwt., topping the market on the day they were sold by 75 cents per cwt.

## Poultry Culling.

The value of removing the poor producers from the poultry flock and the efficiency with which the work can be performed has been so thoroughly established that there is an ever-increasing demand from farmers for information and instruction in poultry-culling. The results of rigid culling in connection with the poultry breeding station flocks has so increased the demand for assistance that the Agricultural Representatives in many cases find it difficult to keep up this branch of their extension work. As the average man or woman interested in poultry can very readily master the more important features of the work sufficiently to remove with efficiency the poor hens from the flock, the Representatives, owing to the number of demands, have found it necessary to confine their activities in poultry-culling to demonstrations for the purpose of training junior farmers and others so that they will be in a position to cull their own flock and those of their neighbours. In this connection the Representative from Lambton reports that twenty-five demonstrations were given to Women's Institutes and that a great deal more interest is being shown in the farm poultry flocks, as evidenced by the large number of modern poultry houses being constructed. The Representative for Peterborough also reports that out of 2,300 birds culled, one-third were unprofitable producers.

## Grasshopper Campaign.

A serious outbreak of grasshoppers occurred on Manitoulin Island during the summer of 1921 with such destructive results that many farmers did not have sufficient feed to carry their livestock through the winter, and, as a consequence, a great many cattle and sheep were wintered on browse almost exclusively. No systematic control measures were adopted during 1921, and as the months of May and June last were very dry, a more serious outbreak occurred in 1922, and the complete destruction of crops was threatened. A general campaign was started to combat the grasshoppers and after representations had been made to the Department of Agriculture and to the Northern Development Branch of the Department of Lands and Forests, it was decided to supply the farmers with poison in sufficient quantities to systematically treat the affected area.

Professor Caesar, provincial entomologist, visited Manitoulin Island on June 13th and 14th, and after going over the worst-infested areas, recommended the following poison bait: Bran, 12 lbs.; sawdust, 12 lbs.; white arsenic, 1 to 1½ lbs.; salt, 1 to 1½ lbs.; water, about 2½ gallons. Professor Caesar also gave a number of demonstrations in mixing and applying this mixture. Farmers were advised to prepare the mixture just before using and to apply it preferably in the morning, when the weather was fine, at the rate of 12 pounds per acre. Excellent results were obtained and the outbreak very effectively controlled. The Agricultural Representative from Manitoulin reports that along the side of a field of grain, 126 dead grasshoppers were counted on a piece of ground 6 inches by 4 inches, and forty dead grasshoppers in a horse's footprint.

Farmers were rather doubtful as to possible results at first, but after the effectiveness of the poison bait was demonstrated, all were anxious to co-operate in carrying out systematic control measures. In order to make the work as effective as possible, a grasshopper day was arranged for, when every farmer was supposed to scatter grasshopper poison.

### Boards of Agriculture.

County Boards of Agriculture are active in a number of counties and where these exist the agricultural representatives work in close co-operation with them in connection with their series of educational meetings, usually held during the winter months, and in conducting short courses of two or three days' duration in live-stock judging. The county Boards of Agriculture have also co-operated with the Agricultural Representatives by assisting with school fairs, judging competitions, plowing matches, and other activities of the local branch of the Department of Agriculture.

### Special Meetings.

In addition to the regular meetings conducted in connection with their work, the Agricultural Representatives have been called upon during the past year to assist with a considerable number of special meetings either as speakers supplying information requested on a variety of subjects or assisting with the organization and advertising of meetings of special interest to the farmers in their respective counties. The special meetings with which the Representatives assisted, covered such questions as: Rural Credits, Hydro-Electric Development for the Farmers, Reforestation, Co-operative Organizations, Fruit Varieties, Breeders' Associations, Agricultural Improvement Associations, and a number of other subjects.

### Fall Fairs.

The Agricultural Societies and Agricultural Representatives are co-operating more and more each year in featuring junior classes in the various departments at the fall fairs with considerable success. A few years ago, practically the only classes for children in the fall fair prize lists were in the sections for writing, drawing, nature collections and art work, but recently junior classes have been added in many cases in the root, vegetable, flower, live stock and poultry sections, and, in fact, a few fall fairs have added a complete junior department separate from their regular prize list classification. These junior classes at the fall fairs have created a great deal of interest and the number of entries have justified the extension of this work. Agricultural Societies have also assisted the junior farmers' work by offering liberal prizes for livestock judging competitions, and by providing livestock classes for stock fed by junior farmers in their livestock feeding competitions. They have also encouraged Boys' and Girls' Club work by offering prizes for stock exhibited by club members. The co-operation on the part of fall fairs is doing considerable to further the Junior Farmers' and Boys' and Girls' Club work throughout the province and the beneficial effects will doubtless be shown by the interest these young people will take in their local fall fairs in the future.

### Breeders' Clubs.

Live Stock Breeders' Clubs have been organized in practically every county and are doing a great deal of useful work in improving the various breeds of live-stock throughout the province, by holding sales of pure-bred breeding stock, promoting community breeding, assisting with Boys' and Girls' Live Stock Clubs, livestock improvement campaigns, holding meetings for discussing improved breeding, feeding and management methods, and field days for the purpose of popularizing the breed represented, and having the members become

better acquainted. The Agricultural Representatives have assisted the Breeders' Clubs very materially in their organization work and other activities which these clubs have undertaken.

The following Live Stock Breeders' Clubs were organized during 1922:—

| County. | Name of Association. |
|---|---|
| Algoma | Echo Bay Live Stock Association. |
| " | Desbarats Live Stock Association. |
| " | Tarentorus Holstein Breeders' Association. |
| " | Iron River Ayrshire Association. |
| Bruce | South Bruce Boys' Breeders' Club. |
| Essex | The Essex County Shorthorn Breeders' Association. |
| " | The Essex County Holstein Breeders' Association. |
| Frontenac | The Frontenac Holstein Breeders' Association. |
| Haldimand | The Haldimand Holstein Breeders' Club. |
| Kenora | Waldhof Live Stock Association. |
| Leeds | Leeds Holstein Breeders' Association. |
| Ontario | Ontario County Holstein Breeders' Club. |
| Perth | Perth County Shorthorn Breeders' Association. |
| Peel | Brampton District Clydesdale Breeders' Club. |
| Fort William | Dawson Road Jersey Association. |
| Port Arthur | Finmark Jersey Breeders' Association. |
| Waterloo | Waterloo Shorthorn Breeders' Club. |

## Co-operative Organizations.

Co-operative organization work has been given considerable attention by the Agricultural Representatives during the past year. They have been called upon to assist in many ways existing co-operative organizations, and in the organization of new associations. The greatest amount of co-operative work has been done in connection with organizing new egg circles and in re-organizing existing egg circles on a long-term contract basis. The celery-growers of Lambton county and the potato-growers of north Simcoe and Kent were organized for the co-operative marketing of their products, and these associations were able to market their 1922 crop very advantageously, due to superior grading and care in shipping.

## Agricultural Improvement Associations.

There are a large number of Agricultural Improvement Associations throughout the province which are doing excellent work in promoting better agricultural methods, and in improving farm conditions. These organizations, which have not been previously considered, include Seed Grain Centres, Horticultural Societies, Beekeepers' Associations, Poultry Associations, Vegetable Growers' Associations, Plowmen's Associations, and Publicity Associations. The Agricultural Representatives are able to work with and assist these organizations in many instances by helping them organize, plan their various lines of endeavour, and by addressing their meetings. The Improvement Associations are also often able to assist the Representative in carrying on work in which their respective organizations are interested. For example, the Representatives have assisted seed grain centres by scoring their fields of grain, and assisting with marketing their crop; Horticultural Societies, by advising them regarding bulbs, shrubs, etc., for distribution for home beautification; poultry associations, by addressing their meetings on poultry topics and co-operating in holding meetings and revising their prize lists. The Improvement Associations in turn have assisted the representatives by assisting with plowing competitions, judging competitions, school fairs, and other similar lines of work.

## Livestock Improvement Campaign.

The counties in which livestock-improvement campaigns have been previously started continued the work last year, and, in addition, campaigns were started more or less vigorously in a number of other counties. In some instances only preliminary work was accomplished, such as the organization of a livestock improvement association, and making arrangements for taking an accurate livestock census by the assessors, while in other counties the necessary organization work was carried out sufficiently early to permit of a vigorous campaign being conducted during the spring of 1922. Satisfactory results have been accomplished in connection with the livestock-improvement campaigns, but it is necessarily work which must be extended over a considerable period, and which must be carefully organized, systematically and persistently carried on if maximum results are to be obtained. The effects of a systematic and persistent campaign is illustrated in Oxford and Peel counties, where excellent results are being obtained and close check is being kept on all scrub sire owners. In five townships in Oxford county, the livestock census returns for 1922 showed that 17 per cent. of the bulls were graded, while in 1921, 24 per cent. of the bulls in these townships were grades. A personal canvass of the scrub-bull owners in the five townships during 1922 resulted in a reduction of the scrub bulls to 9 per cent. of the total number of bulls owned. Another illustration of the effectiveness of the campaign in Oxford county is shown by the fact that out of 121 scrub-bull owners visited during 1922, ninety-one disposed of their grades and purchased pure-breds or are using pure-bred sires. The representative for Peel county reports that forty-two pure-bred bulls were placed in connection with their livestock-improvement campaign work. In most cases these sires replaced grades and in all cases were an improvement over the sires formerly used. In connection with the campaign in Dundas county, fifty pure-bred bulls were placed with farmers who formerly used scrub sires. Twenty-five pure-bred sires is the estimated number introduced in Durham county as a result of the campaign in the spring of 1922, and Halton county reports that thirty pure-bred sires have been introduced since the campaign started. In one township in Perth county, forty-five scrub bulls were reported before the campaign started and after a canvass of the township had been made, only four remained.

In connection with the livestock-improvement work, very valuable assistance was rendered the Agricultural Representatives by members of the Live Stock Branch of the Ontario Department of Agriculture, and by representatives of the Dominion Live Stock Branch ; in fact, without this assistance, these campaigns could not have been effectively carried out.

## Soldiers' Settlement Work.

The establishment of field supervisors under the direction of the Soldiers' Settlement Board, who look after the requirements of soldier settlers, has relieved the Agricultural Representatives of most of the duties they formerly performed in this connection. The representatives continue to interview prospective soldier settlers, and issue reports regarding them to the Soldiers' Settlement Board or their field supervisors. They also assist established settlers in their respective counties, by visiting them on their farms, and giving them advice and assistance in connection with their farm operations, and by giving lectures at short courses provided in different districts for the wives of soldier settlers.

## Miscellaneous.

The representative for Lambton county has made an estimate of the increased cash returns to farmers as a result of the activities of the Lambton county office during 1922. These estimates are fairly accurate and are made up as follows:—

(*a*) *Growing Registered Seed:*—

I endeavoured last spring to interest the Brooke and Alvinston Agricultural Society members in the production of registered seed oats and I had eighteen parties undertake the growing of registered seed. This fall we have on hand at the present time, 6,500 bushels of seed for sale, reserving 1,800 bushels for seed. In the past the growers of registered seed have always been able to secure from 50c. to 75c. per bushel above the average market price. Taking this at the lowest estimate of 50c., it amounts to.... $4,175 00

(*b*) *Shipping Wool Co-operatively:*—

Last spring after the School Fair work was completed, I made a determined effort to have as many farmers as possible take part in the co-operative sale of wool, with the result that we loaded two cars and a part car; or, approximately, 50,000 pounds of wool. I believe the organization received 50,000 pounds of wool more from Lambton county this year than any previous year. There were a great many local buyers going through the county offering 8c. to 12c. per pound for wool, or an average of 10c. per pound, and possibly two more cars were purchased. I understand that the co-operative organization have paid their clients from 13c. to 25c. per pound. I believe if we figure an advance of 10c. gained by co-operative marketing, that we would be well within reason, which would leave our farmers $5,000.00 more for their wool by our efforts..... 5,000 00

(*c*) *Co-operative Marketing of Celery:*—

You will understand our efforts in reference to co-operative marketing of celery, a problem which I spent a great deal of time on myself this summer. At least I was able to secure the Niagara Peninsula Growers to market the celery of about one-half the number of growers. The actual figures of the results of the co-operative marketing are not yet obtainable. However, in speaking to a number of the growers they agree with me in the following statement:

Fifty-nine (59) full carloads of celery were shipped through the organization and large quantities of small shipments by express. In fact, a carload was shipped by express every day for three weeks. Each car, of the 59 cars, contained 215 cases of celery, and the growers themselves stated they received at least 50c. more per case than if they had tried to market it themselves individually; which amounts to about $107.50 per car or $6,342.50 for the season's crop, not counting express shipments..... 6,342 50

Total..... $15,517 50

Table of statistics illustrating extent of activities in connection with the Agricultural Representative offices:—

| County. | No. of Letters Received. | No. of Letters Written. | No. of Circular Letters Mailed. | No. of Incoming Phone Calls. | No. of Visitors at Office. | No. of Meetings Held in Office. | No. of Bulletins and Reports Distributed. | No. of Miles Travelled by Auto. |
|---|---|---|---|---|---|---|---|---|
| Algoma | 1,552 | 1,727 | 1,650 | 3,100 | 1,395 | 31 | 450 | 8,500 |
| Brant | 1,005 | 1,190 | 2,240 | 438 | 922 | 34 | 263 | ..... |
| Bruce | 3,200 | 2,170 | 3,530 | 2,800 | 2,500 | 33 | 1,150 | 18,200 |
| Carleton | 675 | 800 | 4,000 | 1,100 | 600 | 80 | 600 | 9,500 |
| Dufferin | 4,800 | 3,000 | 4,000 | 2,000 | 4,400 | 6 | 500 | 7,500 |
| Dundas | 1,570 | 1,425 | 5,100 | 1,400 | 1,280 | 40 | 260 | 9,800 |
| Durham | 2,400 | 2,044 | 9,295 | 285 | 1,104 | 58 | 1,200 | 11,500 |
| Elgin | 2,800 | 2,000 | 2,500 | 2,000 | 2,000 | 27 | 400 | 10,020 |
| Essex | 2,520 | 2,901 | 8,339 | 1,496 | 2,499 | 29 | 2,070 | 13,920 |
| Frontenac | 2,308 | 715 | 4,913 | 1,174 | 1,358 | 68 | 615 | 8,379 |
| Glengarry | 1,850 | 2,650 | 4,500 | 381 | 2,700 | 67 | .... | 8,000 |
| Grenville | 2,200 | 2,500 | 3,500 | 1,800 | 1,200 | 20 | 700 | 8,200 |
| Grey | 1,936 | 3,625 | 11,510 | 650 | 1,259 | 75 | 500 | 20,000 |
| Haldimand | 1,504 | 896 | 1,002 | 829 | 1,634 | 15 | 350 | 12,975 |
| Halton | 2,866 | 2,655 | 2,479 | 836 | 1,941 | 12 | 718 | .... |
| Hastings | 1,550 | 1,750 | 2,000 | 1,550 | 1,625 | 130 | 10,200 | .... |
| Huron | 1,500 | 1,700 | 1,729 | 500 | 800 | 25 | 2,000 | 15,000 |
| Kenora | 1,047 | 960 | .... | 375 | 1,444 | .... | .... | 9,520 |
| Kent | 2,500 | 2,750 | 3,000 | 2,450 | 2,600 | 40 | 800 | 14,000 |
| Lambton | 1,840 | 2,024 | 2,687 | 1,243 | 2,192 | 15 | 330 | 15,000 |
| Lanark | 1,530 | 1,310 | 760 | 720 | 1,165 | 50 | 50 | 12,500 |
| Leeds | 2,500 | 2,400 | 4,900 | 1,200 | 1,150 | 45 | 1,350 | 8,500 |
| Lennox and Addington | 1,571 | 1,175 | 1,140 | 976 | 1,136 | 35 | 600 | 7,200 |
| Lincoln | 2,400 | 3,475 | 5,181 | 975 | 1,496 | 135 | 527 | 12,500 |
| Manitoulin | 1,014 | 1,122 | 10 | 793 | 2,239 | 30 | 325 | 9,000 |
| Middlesex | 1,826 | 1,527 | 3,221 | 1,047 | 2,571 | 30 | 1,035 | 19,420 |
| Muskoka and Parry Sound | 1,150 | 1,375 | 1,720 | .... | .... | .... | 725 | 5,860 |
| Norfolk | 2,850 | 2,650 | 5,500 | 2,125 | 2,450 | 36 | 1,138 | 7,300 |
| Northumberland | 1,173 | 1,139 | 911 | .... | .... | .... | .... | ..... |
| Ontario | 1,250 | 1,700 | 7,500 | 1,100 | 1,200 | 45 | 450 | 11,280 |
| Oxford | 2,122 | 2,358 | 3,036 | 522 | 2,570 | 16 | 56 | 6,842 |
| Peel | 2,650 | 3,000 | 5,200 | 5,800 | 3,450 | 22 | 3,800 | 13,500 |
| Perth | 1,260 | 1,450 | 600 | 730 | 800 | 45 | 150 | 8,160 |
| Peterborough | 1,075 | 1,150 | 4,000 | 500 | 425 | 110 | 65 | 8,000 |
| Prescott and Russell | 1,540 | 1,495 | 1,635 | 950 | 830 | .... | 1,240 | 9,100 |
| Prince Edward | 1,162 | 1,246 | 1,433 | 2,200 | 1,850 | 50 | 1,200 | 10,000 |
| Rainy River | 2,198 | 3,582 | 4,709 | 3,732 | 2,939 | .... | 978 | 10,870 |
| Renfrew | 1,540 | 1,585 | 2,560 | 675 | 750 | 40 | 250 | 6,800 |
| Simcoe, North | 3,500 | 3,500 | 4,000 | 1,200 | 1,500 | 50 | 500 | 13,000 |
| Simcoe, South | 1,100 | 1,391 | 3,100 | 750 | 1,325 | 22 | 430 | 13,175 |
| Sudbury | 1,058 | 796 | 3,000 | 962 | 1,149 | 4 | 315 | 12,500 |
| Fort William | 808 | 772 | 625 | 988 | 1,040 | 26 | 306 | 6,150 |
| Port Arthur | 1,000 | 750 | 1,200 | 1,200 | 2,000 | 16 | 500 | 7,425 |
| Victoria | 1,661 | 2,568 | 14,227 | .... | 1,509 | 42 | .... | 6,300 |
| Waterloo | 1,635 | 1,593 | 3,025 | 1,525 | 2,139 | 18 | 250 | 13,960 |
| Welland | 2,500 | 1,041 | 968 | 2,400 | 1,900 | 40 | 500 | 8,500 |
| Wellington | 1,646 | 1,175 | 3,170 | 394 | 1,285 | 53 | 1,190 | 6,660 |
| Wentworth | 1,700 | 2,500 | 12,000 | 275 | 6,000 | 75 | 6,500 | 14,000 |
| York | 1,800 | 2,400 | 13,500 | 850 | 1,600 | 50 | .... | 11,000 |
| Total | 90,842 | 91,707 | 190,805 | 60,996 | 83,921 | 1,890 | 47,536 | 479,516 |
| Average | 1,854 | 1,871 | 3,975 | 1,326 | 1,785 | 42 | 1,080 | 10,655 |

The following taken from the report of the Agricultural Representative for Essex county is a list of the meetings addressed by the representative during the year and illustrates the extent and character of the demands made upon the county offices of the department for information and assistance:—

| Date. | | Place. | Nature of Meeting or Organization. | Subject. | Attendance. |
|---|---|---|---|---|---|
| Jan. | 31 | Essex | Farmers' Section Border Chamber of Commerce | Agricultural Extension | 14 |
| Feb. | 16 | Essex | Swine Marketing Course | Swine Extension | 125 |
| " | 17 | Essex | Banquet Farmers' Section | The Young Man in Agriculture | 125 |
| " | 27 | Woodslee | Junior F. I. Association | Agriculture for Young Men | 150 |
| Mar. | 4 | Woodslee | Woodslee U.F.O. | Mission of a Farmers' Club | 50 |
| " | 6 | Essex | Essex U.F.O. | Mission of a Farmers' Club | 60 |
| " | 9 | Essex | U.F.O. Baseball League | Why Play Ball? | 20 |
| " | 17 | Woodslee | Special Dairy Meeting | The Dairy Industry | 30 |
| " | 20 | Essex | Essex U.F.O. | The Season's Work | 45 |
| " | 21 | Essex | Presbyterian Y. People | Irish Travelogue | 40 |
| " | 22 | Cottom | Duroc Jersey Breeders | The Swine Situation | 14 |
| " | 24 | Olinda | Salem U.F.O. | Mission of Farmers' Club | 56 |
| " | 28 | St. Joachim | Special Meeting Farmers | Soils and Crops | 125 |
| Apr. | 3 | Essex | Essex U.F.O. | Co-operation | 60 |
| " | 7 | N. Malden | Erie Grange U.F.O. | Mission of Farmers' Club | 300 |
| " | 10 | Kingsville | Tobacco Co-operative | | 600 |
| " | 11 | Cottam | Social Evening | Humorous Irish Travelogue | 50 |
| " | 12 | Leamington | Mersea U.F.O. | Agricultural Extension | 75 |
| " | 12 | Leamington | Mersea U.F.O. (night) | Mission of Farmers' Club | 500 |
| " | 18 | Essex | Methodist Y. People | Application of Science. | 30 |
| " | 21 | Tilbury | Tilbury U.F.O. | Mission of F. Club. | 30 |
| May | 2 | Blytheswood | Goldsmith U.F.O. | Mission of F. Club. | 20 |
| " | 4 | Woodslee | Woodslee J.F.I.A. | Summer's Work | 21 |
| " | 6 | Oldcastle | Sandwich S. Council | Agricultural Extension | 6 |
| " | 16 | Tilbury | Sunshine U.F.O. | Mission of Farmers' Club | 25 |
| " | 23 | Batten School | Two School Prog. | Victoria Day | 75 |
| " | 26 | Essex | Directors Essex County Fair | Revision of Prize List. | 14 |
| " | 29 | Essex | Essex U.F.O. | Production or Over-Supply | 65 |
| June | 2 | Essex | Shorthorn Breeders | Why Organize? | 25 |
| " | 5 | Woodslee | School Fair Meeting | Plans for 1922 | 30 |
| " | 5 | Essex | Directors County Fair | Horticultural Section. | 14 |
| " | 5 | Blytheswood | School Fair Meeting | Plans for 1922 | 150 |
| " | 6 | Sandwich S. | School Fair Meeting | Plans for 1922 | 25 |
| " | 6 | Maple Grove | School Fair Meeting | Plans for 1922 | 200 |
| " | 7 | Cottam | School Fair Meeting | Plans for 1922 | 60 |
| " | 7 | Salem | School Fair Meeting | Plans for 1922 | 30 |
| " | 7 | Cottam | Duroc Jersey Breeders | Grading | 20 |
| " | 8 | Essex | Holstein Breeders | Why Organize? | 20 |
| " | 8 | Gesto | School Fair Meeting | Plans for 1922 | 40 |
| " | 9 | Pelee Island | School Fair Meeting | Plans for 1922 | 30 |
| " | 12 | Maidstone | Maidstone Twp. Council | Agricultural Extension | 6 |
| " | 13 | Malden | School Fair Meeting | Plans for 1922 | 30 |
| " | 13 | Harrow | School Fair Meeting | Plans for 1922 | 125 |
| " | 15 | Essex | Corn Growers | Why Organize? | 25 |
| " | 16 | Leamington | Officers Essex County Young People's Associations (County U.F.Y.P.O. Association) | A County Field Day. | 10 |
| " | 17 | Amherstburg | Malden Council | Agricultural Extension | 6 |
| " | 17 | Essex | U.F.O. County Picnic Committee | Picnic Features | 12 |

| Date. | | Place. | Nature of Meeting or Organization. | Subject. | Attendance. |
|---|---|---|---|---|---|
| June | 20 | Windsor | Norfolk Farmers Picnic | Address of Welcome | 40 |
| " | 21 | Sandwich | County Council | Report of Work | 30 |
| " | 22 | Windsor | Chambers of Commerce | Agricultural Development of Essex County | 100 |
| " | 24 | Anderdon | Anderdon Twp. Council | Agricultural Extension | 6 |
| " | 28 | Rural School | Closing Exercises | History of Canadian Agriculture | 125 |
| July | 1 | Chatham | Winter Fair Board | The New Winter Fair | 10 |
| " | 10 | Woodslee | Corn Improvement Meeting | Corn Improvement | 40 |
| " | 11 | Maidstone | Corn Improvement Meeting | Corn Improvement | 50 |
| " | 12 | Leamington | County U.F.Y.P.O | Boys' and Girls' Club Work | 75 |
| " | 13 | Cottam | Corn Improvement Meeting | Corn Improvement | 60 |
| " | 13 | Essex | Ont. Corn Growers Co-operative Association | Marketing Seed Corn | 60 |
| " | 14 | Gesto | Corn Improvement Meeting | Corn Improvement | 52 |
| " | 17 | Stoney Pt | Til. N. Twp. Council | Agricultural Extension | 6 |
| " | 17 | Stoney Pt | Corn Improvement Meeting | Corn Improvement | 150 |
| " | 19 | Blytheswood | Corn Improvement Meeting | Corn Improvement | 35 |
| " | 20 | Salem | Corn Improvement Meeting | Corn Improvement | 65 |
| " | 21 | Harrow | Corn Improvement Meeting | Corn Improvement | 15 |
| " | 24 | N. Malden | Corn Improvement Meeting | Corn Improvement | 125 |
| " | 26 | Oldcastle | Corn Improvement Meeting | Corn Improvement | 10 |
| " | 27 | Auld | Corn Improvement Meeting | Corn Improvement | 75 |
| " | 31 | Comber | Corn Improvement Meeting | Corn Improvement | 35 |
| Aug. | 2 | St. Joachim | Special Meeting Farmers | Agricultural Short Course, 1923 | 100 |
| " | 4 | Leamington | U.F.O. County Picnic | Chairman | 1,000 |
| " | 9 | Maidstone | Women's Institute Social | Chairman | 200 |
| " | 12 | Comber | Til. W. Twp. Council | Agricultural Extension | 6 |
| " | 11 | Kingsville | Tobacco Co-operative | | 600 |
| " | 18 | Ridgetown | Farmers Auto Excursion | Purpose of Ex. Farm. | 85 |
| " | 19 | Gesto | Col. N. Twp. Council | Purpose of Ex. Farm. | 6 |
| " | 22 | Tiffen, O | Ohio and Essex Farmers | Reply Address of Welcome | 75 |
| " | 22 | Findlay, O | Ohio and Essex Farmers | Reply Address of Welcome | 256 |
| " | 23 | Lima, O | Ohio and Essex Farmers | Reply Address of Welcome | 100 |
| " | 24 | Van Wert, O | Ohio and Essex Farmers | Reply Address of Welcome | 85 |
| " | 24 | Paulding, O | Ohio and Essex Farmers | Reply to Address of Welcome | 60 |
| " | 26 | Kingsville | Gosfield S. Council | Agricultural Extension | 6 |
| Oct. | 19 | Harrow | County U.F.Y.P.O | Why Should Young Men Farm? | 40 |
| " | 27 | Woodslee | Woodslee J.F.I.A | Plans for Winter | 20 |
| " | 28 | Essex | Holstein Breeders | County Co-operative Marketing Assoc. | 25 |
| | 83 | Meetings | | Total Attendance | 7,419 |

TOTAL MEETINGS WHERE ADDRESSES WERE GIVEN.

| | Number | Attendance |
|---|---|---|
| Meetings where addresses were given | 83 | 7,419 |
| Executive Meetings in Office | 29 | 423 |
| | 102 | 7,842 |

## Home Demonstration Work.

The Home Demonstrator assisted the Agricultural Representative in Peel county in directing the three-months' course in agriculture and domestic science at Bolton last year, by taking charge of the girls' class which had an enrolment of seventy-five and an average attendance of fifty-eight. She assisted with the lectures n home economics and had charge of the girls' class in public speaking, debating, and physical culture.

Special short courses were conducted by the home demonstrator in co-operation with the Women's Institutes and Junior Institutes, as shown by the following table:—

| Place | Date | Course | Registered | Average Attendance |
|---|---|---|---|---|
| Caledon | Mar. 20-31 | Sewing | 18 | 16 |
| Clarkson | Jan. 30–Feb. 3 | " | 18 | 17 |
| Clarkson | Mar. 27-21 | " | 13 | 12 |
| Brampton | Apr. 24–May 5 | " | 14 | 12 |
| Cheltenham | Oct. 9-20 | Home Nursing | 36 | 29 |
| Alton | Oct. 23–Nov. 3 | Sewing | 14 | 12 |

## University Extension Courses.

The Junior Institutes in Peel county, under the direction of the Home Demonstrator, arranged with the University of Toronto extension service for a series of lectures on English literature to be given during the winter months at Brampton, Streetsville, and Cheltenham. These courses are reported on by the Home Demonstrator as follows:—

The University of Toronto was responsible for instruction at three courses with Peel Juniors during the winter of 1921-22. Brampton juniors secured the use of the High School without charge, except for a small bonus given to the janitor. An English course of their own choosing, combining poetry, a short story, essays, history, a novel, a play of Shakespeare's and current events, proved very profitable. Several lessons were illustrated. A banquet closed this course.

Streetsville continued work in cultural English begun the previous year. Literature and the correct use of the English language were emphasized.

Cheltenham Juniors chose a course in English. Current events and Shakespearean plays were taken up. The historical teaching interwoven included such interesting discussions as "To what race do we belong?" and "How did the English language come into being?"

Necessary text books were purchased by members. Questions and general discussion brought out the object of the author. Home studies were assigned, students bringing their interpretations to the class. Many new "intellectual adventures" were attempted and enjoyed. Local and travelling expenses were carried by each group. The university paid the lecturer's fees.

| Place | Date | Subject | Instructor | Registration | | Av'ge. Attend. | No. of Classes |
|---|---|---|---|---|---|---|---|
| | | | | Girls | Boys | | |
| Brampton | Oct. 18/21 Mar. 7/22 | English Literature | Prof. G. M. Jones | 23 | 10 | 20 | 18 |
| Cheltenham | Nov. 1/21 Mar. 9/22 | English | Prof. W. M. Whitelaw | 25 | 10 | 25 | 14 |
| Streetsville | Nov. 22/21 Mar. 16/22 | English | Prof. W. M. Whitelaw | 23 | 4 | 19 | 9 |

Brampton and Cooksville are organized for the winter of 1922-23. Bolton Juniors are waiting for a hall to become available.

### Junior Institutes.

The Junior Institutes in Peel county, under the direction of the Home Demonstrator, have been very active during the past year, carrying out an extensive programme for the benefit and training not only of their own members, but for the general advancement of conditions in the rural districts. The Junior Institutes assisted the Senior Women's Institutes with their programmes, organized university extension courses in English literature, sewing classes, home-nursing classes, conducted cooking demonstrations, socials, garden parties, concerts, judging competitions, and gave financial and personal assistance to many community enterprises. The Junior Farmers' Improvement Association received excellent co-operation and support from the Junior Institutes in all their county and inter-county activities such as field days and debates.

A judging competition in cooking and sewing for Junior Institute members was conducted at Bolton fall fair with five teams of three girls taking part. The Junior Institute members received a valuable training in judging, cooking and sewing in that the Home Demonstrator conducted twenty-two judging practices preparatory to the judging competition.

The public health and child welfare work which in the past has been conducted by a committee of the Women's Institutes, in co-operation with the Agricultural Representative and Home Demonstrator, was transferred to the Peel County School Medical Inspection Committee in September, 1921. This committee is composed of the public school inspector, one representative of the Women's Institutes, and three representatives of school boards with the Home Demonstrator acting as secretary-treasurer. The school inspection work is financed by grants from the county council, Women's Institute, and School Boards. Two nurses are employed, one for the northern portion and one for the southern portion of Peel county.

The attached table gives an idea of the extent of the work carried on by the school nurses:—

| | School Visits | Inspections | Defects | Terminations | Home Visits | Consultations | Exclusions | Treatments |
|---|---|---|---|---|---|---|---|---|
| Southern Unit beginning Sept. 20, 1921..... | 264 | 10,101 | 1,659 | 632 | 527 | 44 | 12 | 122 |
| Northern Unit beginning Nov. 9, 1921..... | 113 | 2,726 | 1,519 | 518 | 547 | 66 | 23 | 127 |
| Totals..... | 377 | 12,827 | 3,178 | 1,150 | 1,074 | 110 | 35 | 249 |

In regard to the effectiveness of public health and child welfare work, the Home Demonstrator reports as follows:—

"When the first survey was taken in 1917-18, the percentage of defects was 150. That meant a large number of pupils suffered from two or more defects—not two defective teeth, but perhaps defective teeth and tonsils, or had ear or other trouble. Later surveys taken at various periods showed decreases, indicated by the lower percentages 133, 115, 97. To June 30th this year, there were seventy per cent. defects—a reduction of eighty per cent. Decrease in defects might, to a certain extent, be due to the difference in children now in schools, but in large part must be due to increased health teaching and supervision of the school nurses and the clinics held in different parts of the country."

The Home Demonstrator has been called upon to take part in many other activities during the past year, which include writing newspaper articles, addressing meetings in the county and throughout the province, conducting physical culture classes, visiting schools and homes, in addition to the office work incidental to planning the work under her direction.

A summarized statement of activities of the Home Demonstrator appears in the accompanying table:—

| | |
|---|---|
| Office calls | 885 |
| Phone calls | 918 |
| Letters received | 791 |
| Letters sent | 746 |
| Circular letters sent | 1,230 |
| Bulletins given out | 1,650 |
| Meetings addressed | 96 |
| Attendance | 3,367 |
| Special short courses organized | 9 |
| Schools visited | 9 |
| Rural homes visited | 71 |
| Newpaper articles | 15 |
| New organizations formed | 1 |
| Half days in office | 264 |

## CO-OPERATION AND MARKETS BRANCH

Incorporation of Co-operatives under Part XI-A of The Ontario Companies Act during the year have been as follows:—

Springfield Co-operative Milk Producers, Ltd., Springfield.
Consumers' Co-operative Store Company, Nipigon.
London Co-operative Stores, Ltd., London.
Gladstone Milk and Produce Company, Ltd., Belmont.
Spencerville Farmers Co-operative Company, Ltd., Spencerville.
Farmers' Co-operative Company of Prescott, Ltd.
Sydenham Co-operative Company, Ltd., Wallaceburg.
Glen Norman Dairy Company, Ltd., Dalhousie Sta.
Mosa & Ekfrid Co-operative Company, Ltd., Glencoe.
Wexford Co-operative Arena Company, Wexford.
Bedworth United Farmers Co-operative Corporation, Ltd., Bedworth.
Fishermen's Co-operative Association, Ltd., Windsor.
Kent County Potato Growers Co-operative, Ltd., Blenheim.
Harrowsmith Co-operative Association, Ltd., Harrowsmith.
Guthrie Co-operative Sporting Co. Ltd., Guthrie.
Lambton Co-operative Milling Co., Oil Springs.
Thunder Bay Farmers' Co-operative Company, Ltd., Fort William.
The Simcoe Potato Growers' Co-operative Association, Craighurst.

Total, 18. Incorporated co-operatives previously reported number 179, making a total of incorporated co-operative concerns in the province of 197.

Two special incorporating Acts for co-operative companies have been enacted as follows:—

Niagara Peninsula Growers, Limited, in 1920.

Ontario Co-operative Dairy Products, Limited, in 1922.

The Niagara Peninsula Growers, Limited, is a co-operative company formed for marketing the fruit crop of Niagara peninsula. Along with this company is the Niagara Peninsula Grape Growers, Limited, and through these co-operatives a large proportion of the Niagara fruit is marketed. During the year the Niagara Peninsula Growers also acted as the sales agent for a number of other co-operatives in different parts of the province, such as apple-growers, potato-growers, etc. About seventy cars of celery were marketed for the growers of this crop in the Thedford district. The company consists of 800 individual growers from Burlington to Niagara and for these growers a total of 3,000 cars of fruit have been marketed, valued at $2,000,000, not including the grape shipments, of which there were 1,500 cars.

The Ontario Co-operative Dairy Products, Limited, was incorporated by special Act in 1922. The object for which this company was formed is to act as the marketing agent of the cheese and butter factories of the province, of which there are some 845 cheese factories and 212 creameries. The proposal is to start business with at least 50 per cent. of the cheese factories, and 20 per cent. of the creameries are under contract to sell through the company; the local plants remain as at present under local control, and the local factories, as such, and not individuals are the shareholders in the marketing company. The dairymen of the province are at the present time completing the organization of this company which is hoped will be in operation for the spring of 1923.

Both of the above companies desired special incorporating Acts to facilitate representation on the boards of directors from the different districts covered by their operations. In co-operative companies it is desirable that the individual producer be kept in as close contact as possible with the operations of his marketing company; where membership is spread over the province, the holding of meetings where all shareholders can attend is difficult. Provision in these

companies is made for the holding of legally called local or district meetings of shareholders for the election of directors and transaction of other business of the company.

Another new feature of these companies is the marketing contract. No shareholder of member is accepted as such until he signs a legal contract to deliver to his co-operative the product of the commodity being organized. Until recently this requirement of the member was embodied in the by-laws and in a few cases where it has been tested in the courts was just as effective as the contract; but the separate contract carries with it a stronger moral obligation on the officers of the company to enforce it as well as emphasizing the responsibility of the member in a greater degree than does a by-law.

As noted above, a number of new small co-operatives are incorporated each year. These, however, find themselves in competition with one another in marketing just as the individual producers had competed previously to the formation of their locals. This, together with the experience of growers across the line brought to us first-hand by Mr. Aaron Sapiro and others, has established the principle of commodity organizations; that is, a federation of the local organizations marketing a commodity or a province-wide marketing company for a single farm product or products closely allied. The tendency in this direction in the province is illustrated not only in the commodity organizations noted above, but by the preparations under way for the producers of the following commodities to organize, namely: honey, eggs, beans, and celery.

The Ontario Honey Producers' Association last year appointed a committee to complete the organization of a co-operative marketing company. This committee during the year completed its labors and presented to the following annual convention a plan of organization which received the approval of the growers. Provisional directors were appointed, the company is in process of formation, and it is hoped that a large proportion of the 1923 crop of honey in Ontario will be marketed co-operatively.

Eggs have been marketed in Ontario through small local egg circles since 1911. No startling progress has been made, however, and these small concerns are realizing that as long as individual circles compete with one another the situation will not be materially improved. Eggs are usually considered a by-product on the farm and are produced on practically every farm in the province (there are only about seventy-five commercial egg-producers in Ontario). A province-wide commodity organization under such conditions would seem to present peculiar difficulties but it seems safe to predict that eventually local egg circles will federate for the purpose of grading in district candling stations and for marketing. Oxford and Grey counties have already approached the department for assistance in federating the egg circles in those counties.

The commercial bean-growers cover certain well-defined areas in Elgin and Huron counties, and because of this fact a commodity organization offers a hopeful field of endeavour towards a successful marketing company. Preliminary steps are being taken in this direction.

The most extensive single area producing celery in the province is situated near Thedford in the county of Lambton. During the year the growers of this district were consulted regarding a marketing organization for their product. A tentative arrangement was made with the Niagara Peninsula Growers, Limited, for handling the 1922 crop and the celery-growers of Thedford district hope to have their organization completed during the next few months. Some of the growers, with department officials, made a trip of inspection to the celery areas

of Kalamazoo, Michigan, to observe the marketing methods of growers competing with Ontario producers.

The experience of farmers with commodity marketing is drawing the attention of other industries to this principle. The fishermen bordering on Lake Ontario have been in touch with this Branch and have been assisted in the formation of a marketing company for their own product. Nothing large has been attempted during this first year, but the company has given satisfaction in marketing a considerable proportion of the fish of its members. About 95 per cent. of the catch in this district (Lake Ontario) is at present marketed in United States and one of the important objects of the company is to make Canadian fish better known to Canadian consumers.

### Unincorporated Organizations.

As previously reported, these organizations are not required to make a return of any kind to any department of the Government, and it is therefore impossible to determine the extent and nature of their businesses. Their value to producers in business education, however, is important and the lessons learned through the activities of Farmers' Clubs and Shipping Associations are a necessary part of a good foundation for future business on a sound co-operative basis. Perhaps the most important of these non-incorporated co-operative organizations are the livestock shipping clubs which practice co-operative shipping to central livestock markets. A large proportion of these shipments go through the livestock department of the United Farmers' Co-operative Company, Limited, at Toronto and Montreal This co-operative commission firm is adopting the contract system and is asking shipping clubs to contract for the sale of their livestock through this central company.

Other unincorporated clubs are dealing largely in farm supplies on a co-operative basis for their members.

### Seed-Cleaning Plants.

Power seed-cleaning machines can be purchased and installed at a comparatively small cost and because of this fact the need for a loan is not great and not much advantage has been taken of the provision made for loans to co-operatives for this purpose under the Co-operative Marketing Loan Act. The Kerwood Farmers' Co-operative Company, Limited, of Kerwood, and the Mersea Farmers' Co-operative Company, Limited, of Leamington, during the year each obtained a loan of $3,000. The plant of the latter company was later burned, the insurance, payable to the Government, as one of the securities for the loan. Sixteen other farmers' co-operatives in the province operate power seed-cleaning machines.

### Loans Under Northern Development Act.

Some time ago the Northern Development Act, administered under the Department of Lands and Forests, was amended to provide loans to co-operatives in Northern Ontario. Before such loans are granted, however, the approval of the Minister of Agriculture is required, who must be satisfied that such a loan would be of benefit to the settlers or assist in developing the district. To date requests have come from the loan commissioner for recommendations on some seven applications of co-operatives for loans. Favourable recommendation was given in five cases, the other two being unfavourably reported on. With one

exception the loans made have proved beneficial, the loan to the Sudbury Co-operative Creamery Company being very satisfactory both from the standpoint of the company and the department which granted the loan.

## Community Halls.

Under the Community Halls Act, 1919 and 1920, the following community halls and athletic fields have been completed and grants paid thereon:—

| Year | Name | Place | Grant |
|---|---|---|---|
| 1920 | Binbrook Community Hall | Binbrook | $2,000 00 |
| 1920 | Cobden " " | Cobden | 2,000 00 |
| 1921 | Lakefield " " | Lakefield | 2,000 00 |
| 1921 | Blyth " " | Blyth | 2,000 00 |
| 1921 | Raymond " " | Raymond | 1,007 33 |
| 1922 | Humberstone " Park | Humberstone Twp. | 1,351 95 |
| 1922 | S. Norwich " Hall and Athletic Field | Otterville | 2,000 00 |
| 1922 | Dunchurch " " | Dunchurch | 924 75 |
| 1922 | Londesboro " " | Londesboro | 2,000 00 |
| 1922 | Moonstone " " | Moonstone | 1,095 53 |
| 1922 | Kimberley " " | Kimberley | 2,000 00 |
| 1922 | Slate River " " | Slate River | 1,214 70 |
| 1922 | Eady " " | Eady | 1,577 68 |
| 1922 | Vandorf " " | Vandorf | 1,149 97 |
| 1922 | Curries Crossing " " | Curries | 1,354 80 |
| 1922 | Bancroft " " | Bancroft | 2,000 00 |
| 1922 | Caradoc Twp " " | Mt. Brydges. | 2,000 00 |
| 1922 | Mindemoya Consolidated School | Mindemoya | 1,834 40 |
| 1922 | Carlisle Community Hall | Carlisle | 2,000 00 |
| 1922 | Dorion Consolidated School | Dorion | 2,000 00 |
| 1922 | Tottenham Community Park | Tottenham | 2,000 00 |
| 1922 | Glanford Township Community Hall | Mt. Hope | 2,000 00 |

Applications have been made and construction is under way at the following places:—

Percy Township.
Tamworth Consolidated School.
Humber Heights " "
Savard " "
Wellington " "
Brooklin.
Bond Head.
Cavan.
Craithie.
Crediton.
Britannia Heights Consolidated School.
Dutton.
Falls View. " "
Grantham Township " "
Evanturel.
Moorefield Community Park.
Moose Creek.
North Gower.
Oxdrift.
Quibell.
Rosseau.
Sharbot Lake.
Stoney Creek Athletic Field.
Wallacetown.
Waterdown.
Springford.
Schreiber.

Visits have been made to other centres where initial steps towards establishing community halls or athletic fields are being taken. Correspondence would indicate that quite a number of other communities will establish similar community centres. The general prosperity of the farmer in any year has an influence as to the number of such buildings constructed, and under declining returns a larger proportion of people will not tax themselves for something which they consider non-essential or a luxury. That community halls and athletic fields have been of very material benefit, however, is abundantly evident wherever they have been established, resulting in a broadened social life in the

open country. Dramatic clubs, baseball, football, tennis and other athletic clubs, extension lectures, festivals, and numerous other social events, have created a real and wholesome community consciousness. Every community in the province would be a better place in which to live and in which to bring up a family of growing boys and girls if it were similarly equipped with a public building around which the social life of the people might centre.

### Miscellaneous.

The usual work of the Branch has been carried on; consultations with boards of directors of co-operatives, addressing meetings of growers, clubs, short courses and conventions, assistance in obtaining letters patent, framing by-laws and agreements, and generally assisting in promoting co-operative endeavours in the province.

## COLONIZATION AND IMMIGRATION.

Although restricted by prevailing conditions, there was considerable activity in the work carried on under this branch. The following table gives figures which will indicate the outlines of the work accomplished:—

| | |
|---|---|
| Number of farm labourers placed (including women and children) | 1,919 |
| Number of domestic servants who passed through the Canadian Women's Hostel, Carlton Street | 470 |
| Number of farm labourers placed by the Salvation Army | 160 |
| Number of domestic servants placed by the Salvation Army | 811 |
| Number of railway certificates issued to settlers proceeding to Northern Ontario (This comprises 1,784 adults, 70 children) | 846 |
| Number of letters received | 13,562 |
| Number of letters sent out | 10,184 |
| Literature sent out:— | |
| This includes:— | |
| "A New Land Nearby" (Northern Ontario). | |
| "Farming Opportunities in Ontario." | |
| "Ontario" (Handbook) | 9,315 |
| Ontario maps | 2,356 |

The placements of farm labour were considerably less than the previous year due to the fact that farmers did not make application for as large an amount of help. This was, no doubt, due to adjustments which were taking place in the agricultural industry.

### Work of the London Office.

The London Office had a very busy year as the following figures will indicate:

| | |
|---|---|
| Inward letters numbered | 25,276 |
| Outward " " | 26,045 |
| Callers numbered | 10,391 |

The following are the numbers of new settlers who were sent to Ontario during the year under review, directly through the agency of the London Office:—

| Men with capital over £500. Number | Total Capital |
|---|---|
| 34 | £71,100 |
| **Men with capital under £500. Number** | |
| 354 | £22,543 |

In addition to the above the London Office sent 274 domestic servants to Ontario during the year. During the Spring of 1922 two personally conducted parties of emigrants went forward to Ontario under the auspices of this office. One of these parties was accompanied by the Assistant to the Agent-General, Mr. S. E. Percival, and the other by Mr. Howard Craig, Chief Clerk and Accountant.

Parties of boys and girls, under the auspices of such organizations as Dr. Barnardo's Homes, the Catholic Emigration Society, the Liverpool Sheltering Homes, and similar societies—all such children being examined and passed upon by representatives of this office—have come at various dates during the year.

Domestic servants have been sent out practically each week.

The Salvation Army also sent a considerable number of girls to Domestic Service in Ontario during the year, providing them with assisted passages partly from funds supplied by the Govermnent of Ontario.

In order to give an idea of the class of men with capital who were sent to

Ontario in 1922, the following particulars regarding some of them may be of interest:—

R.D., from Yorkshire; married; two children; intended to buy a farm in the Brantford district; capital £6,000.

F.T., from County Durham, bought a farm in Ontario; capital £4,000.

M.T., from Yorkshire; married; went out to a situation to learn Canadian farming; capital £600.

C.G.C., ex-Canadian soldier; fully experienced farm worker; capital £3,000.

A.R.G., Irishman; brought up on a farm; capital £500, and pension of £52 a year.

P.W., Scotsman; two of his sons ploughmen, himself an experienced tenant farmer; capital £600.

B.W., single; farmed for twenty years on his own account; capital £600.

L.S., young ex-service man; had worked on farm and could milk and plough; anxious to gain Canadian experience; capital £600.

A.A.B., Scotsman; married; ex-R.I.C. man; experience of stock and horses; capital £600.

E.H., farmer, with son a ploughman; life-long farm experience; capital £700.

T.R., Scotsman; experienced farmer, capital £600 to £700.

J.C., Scotsman; single; working on farm with father; fifteen years' experience of live stock capital £700.

L.C.B., Kentish farmer; all round experience, capital £708.

W.M.C.I., Irishman; farming since boyhood; married; capital £800

A.W.C., butcher and live-stock man; married; two sons; intended to take up farming and cattle rearing; capital £800.

A.F.W.H., ex-officer, aged twenty-eight, with nine and a half years army service; capital £1,000.

O.B.P., ex-officer; married; bright, well-set-up fellow; wanted to learn Canadian farming; capital £1,000.

W.D., Scottish farmer; married; life-long experience; breeder of cattle and Clydesdales; capital £1,200.

E.C.G., formerly a tea-planter in India; wished to take up mixed farming; ex-officer; could plough and handle horses; capital £1,500.

V.G.S., ex-officer; married; seven years' experience in farming in Yorkshire; capital £1,500 to £2,000.

E.W.S., aged twenty-one; single; six years' farm experience; capital £2,050.

W.L., married; two sons; going out to friends in Ontario; capital £2,000.

J.L.T., ex-officer; rented 300 acres of land in England; capital £2,300.

M.B.H., a lady from Ireland, who took with her a good general farm hand and his family, with a view to renting a farm with option to purchase; she herself had a family of three sons and three daughters; capital £2,650, and large private income.

D.F.G., single man; ex-officer; had been a pupil on a mixed farm for a year; capital £3,000.

A.L., married man; going out to friends in Ontario to learn farming; capital £3,200.

A.K., farmer all his life; married; capital £5,050.

J.P.D., went out to buy a farm home, capital £10,000.

S.H.D., married man; going to friends in Ontario; experienced in fruit farming; capital £10,000.

The total capital possessed by thirty-four people, including those mentioned in this list, with a few additional ones, was £71,000.

In interesting people in the Province of Ontario, the London Office utilizes publicity and personal effort in every way which seems likely to produce results. Close contact is maintained with the Booking Agents and organizations interested in advancing immigration. Numerous lectures are delivered by the Agent-General and his staff. Motion pictures are used extensively. Several Ontario films have been distributed over 1,000 different theatres to cover a regular circuit and this work is carried on with very little cost to the Province.

London Office has also presented displays of the mining products of the Province and has supervised the displays of Ontario fruit and dairy products at Shows in Great Britain. At the Fruit Show sample apples from Ontario were sold and were taken up eagerly.

Ontario news paragraphs are sent to 100 different newspapers circulating especially in rural England.

Attention has also been given to trade inquiries in regard to opportunities in Ontario and every effort has been made to further increase the demand in the British Isles for Ontario farm produce.

The Office has also been of very marked service to visitors from Ontario in London.

## KEMPTVILLE AGRICULTURAL SCHOOL

The attendance at the school for the term which opened in October is almost the same as it was a year ago. In view of the prevailing farm conditions it is gratifying that there has been no decrease. Forty-two young men, and nineteen girls are in attendance. A profitable crop in the section of Ontario served by the school is all that is required to greatly increase the attendance here. During the past winter, a three-weeks' Short Course in General Agriculture was held and was attended by twenty-five young men. During two days of this course, the Canadian Packing Co. of Hull, supplied the school with a car of bacon and live hogs. Competent speakers conducted a bacon hog course that was of great benefit to our regular and short course students; and to the hog raisers of the district who were in attendance. Ninety-seven enrolled in the two-weeks course in Household Science.

The first Teachers' Training Course in Agriculture conducted by this Institution, was held during July and August. The initial class consisted of seventy-one lady teachers. Owing to limited accommodation in residence, it will be impossible to complete the two-year course with these teachers and to furnish accommodation for a new class of similar size.

One new member of the permanent staff, Mr. P. M. Dewan, B.A., B.S.A., was appointed during the past year. Mr. Dewan is taking the work in Poultry; Bees; Hogs; and Economics. The services of the following have been secured to temporarily assist in the lecture work of the school:

Mr. D. M. Morrison, B.A., (English and Mathematics).
Mr. Chas. Warren, (Farm Mechanics).
Mr. W. Gardiner, (Milk Testing and Butter-making).
Miss A. R. Newman, (Sewing, Household Practice and Laundry work).
Miss E. Bolster, (Home Nursing).
Miss Mary Kealey, (Millinery).

The lecture work in Poultry and Bees was conducted last term by members of the staff of the Central Experimental Farm. Similar assistance is generously being given us this term for our Poultry Short Course.

### Live Stock Record.

During the past year we exhibited Holsteins and Clydesdales at the Central Canada Fair and the Royal Agricultural Winter Fair with considerable success. Our entries were all placed at Ottawa with the exception of one calf. At Ottawa we won the Junior and Reserve Grand Championship with our Senior Yearling bull, K.A.S. Dandy Rattler. At the Royal, we exhibited eleven head and won ten prizes.

At present, the farm is carrying the following live stock: Horses, 10; Holsteins, 39; Ayrshires, 13; Shropshire sheep, 34; Yorkshire hogs, 34.

The following is a record of all our cows and heifers during their last lactation period, with the exception of six young heifers, daughters of our bull, Count Rauwerd Rattler, these having been milking for only a short time. They give excellent promise, and are testing exceptionally high:

| Holsteins | Age | Yield | Time | Remarks |
|---|---|---|---|---|
| MATURE HERD: | | | | |
| Goldie Keyes Camille | 5 yrs. | 26,681.0 (R.O.P.) | | 1,000 lbs. butter |
| Monklind Jenny Lind | 13 " | 24,875.6 (R.O.P.) | | 853 " " |
| Daisy Mercena Pontiac | 5 " | 19,882.1 | | |
| Margaret Pontiac Pride | 4 " | 16,534.0 (R.O.P.) | | |
| Pontiac May Echo Walker | 4 " | 11,903.0 (R.O.P.) | | |
| Toitilla Rue | 12 " | 11,819.8 | | |
| Average | | 18,616.1 | | |
| JUNIOR HERD: | | | | |
| Waldorf Jenny Lind | 2 " | 15,570.0 (R.O.P.) | | |
| May Tensen Colantha | 3 " | 11,822.6 (R.O.P.) | 245 days | unfinished. |
| Fanny Tensen DeKol | 3 " | 7,894.9 | 308 days | |
| K. A. S. Toitilla Lass | 3 " | 7,103.4 | | |
| Average | | 10,597.7 | | |
| Herd Average | | 14,606.8 | | |

| Ayrshires | Age | Yield | Time | Remarks |
|---|---|---|---|---|
| Lady Hopeful | 6 yrs. | 15,896 (R.O.P.) | 323 days | period unfinished, milk will average nearly 5% for year. |
| Sprucehurst Queen Nancy | 9 " | 11,898.6 | | |
| K. A. S. Alice | 5 " | 8,597.2 | | |
| K. A. S. Queen | 5 " | 8,151.6 | | |
| Average | | 11,158.6 | | |

## DEVELOPING A POULTRY PLANT.

The poultry plant at the Kemptville Agricultural School comprises two laying houses, and a breeding house. Each laying house is divided into two sections, and is capable of accommodating about one hundred and twenty (120) birds. The breeding house is divided into six mating pens. During the past summer, runs have been arranged and fenced adjoining these buildings.

Besides these houses, a colony house ten feet by twelve feet has recently been built by first-year students. A second house of similar type will be built before the brooding season opens.

About three hundred laying birds are maintained at present. Approximately two-thirds of these are Barred Plymouth Rocks; the remainder are White Leghorns. As soon as space permits, a few birds of the other more popular varieties will be purchased. These will be used for breed studies and demonstrations with the students.

Trap nests have been installed in all the houses, and actual trap nesting of the birds was commenced December 1st. The school was not in a position to begin this work at an earlier date. From the records of egg production so far, it would appear that the institution has some very promising birds. A few pullets laid as many as twenty-four and twenty-five eggs during the month of December. It must, too, be remembered that these records were made without the aid of artificial lights.

Several fattening crates have just been completed, and in a few days second-year students will begin a practical course in the fattening of chickens. Immediately following this course, these same students will commence the operation of incubators. The school now has five smaller-sized incubators. Two, 1000-chick coal stove brooders have been ordered. These will be used in the colony houses, already mentioned, for the brooding of chicks.

During the spring months as many eggs as the school can supply will be sent out to applicants for hatching purposes. Last spring the demand for eggs exceeded the supply. In the past few months there has been a great demand for cockerels for breeding use. In request for both eggs and cockerels, the Barred Rock variety has been by far the most popular.

A Short Course in Poultry Husbandry will begin January 29th, and will continue for one week. This Course will be as practical as it is possible to make it. Applications are now coming in, and it is expected that the attendance at this course will prove the necessity of more extensive courses in the future.

Poultry is becoming a very important branch of farming in this section of the province and this institution is anxious to serve and develop this industry.

## Horticultural Work.

The past year was the first in which definite steps were taken towards developing a Horticultural Department at the school. A beginning was made in laying out and planting the grounds around the school. The work was undertaken by the Farm staff, and as a considerable amount of grading had to be done prior to any planting, the amount of material that could be set out after this preliminary was done, was necessarily limited.

The driveways were laid out, the lawns seeded, and a number of trees of the following species were planted: Hard and Soft Maple, Elm, Poplar, Birch, Norway Spruce, White Pine and several varieties of Cedar. Several groups of flowering shrubs were also planted, the material employed consisting of the following: Spirea, Philadelphous, Carragana, Syringa, Viburnum, Lonicera, Hydrangea, Dierreilla, Hamamelis. A football field was laid out, and was used by the students to a considerable extent during the fall term.

There is however, a great deal of work yet to be done in the matter of grading, before the grounds can be said to be in even a presentable condition. During the coming season, it is hoped that much of this initial work will have been completed.

The apple orchard planted five years previously, and consisting of approximately nine acres containing about twelve hundred trees, gave promise of yielding a satisfactory crop of fruit of such early bearing varieties as Wealthy, Duchess and Alexander. On several of the larger trees more than one hundred apples were counted, this initial crop was practically a total loss, due to a severe hail storm early in the season. Favourable weather, however, enabled the trees to make a rapid recovery, and considerable growth was made during the season.

A Vegetable Garden was started with the object of providing material necessary for the school dining-room, and where cultural methods may be demonstrated. In this connection, however, the lack of a greenhouse and the necessary frames delayed the maturity of several crops. Frames will be available for work during the coming spring, and it is hoped that in the near future a small greenhouse will be provided to permit the starting of crops at a suitably early date.

A patch of raspberries and strawberries was planted and made satisfactory growth during the season. The best standard varieties suitable for growing in Eastern Ontario were selected, and during the coming spring a limited amount of this strawberry stock will be available at standard prices for students and others desirous of planting such in their home gardens.

During July an area containing some seventy plots (each plot consisting of two hundred square feet) was laid out, planted, and cared for by teachers attending the Summer school.

During the past year, a number of lectures have been given at outlying points, and the subjects treated with have been those of "Farm Home Beautification," "The Home Vegetable Garden" and "Hardy Fruits suitable for Eastern Ontario".

At the request of their owners, several farms have been visited and plans drafted with suggestions for planting and improving the home surroundings.

Assistance was given in judging at a number of Fall and School Fairs, where an opportunity was afforded to bring before the exhibitors the standards of quality and type that should be aimed at in the fruit, vegetables, roots, flowers and other material grown.

### Field Crop Results Interesting.

In general, satisfactory crops were produced on the farm the past season. Oats, however, suffered severely from rust, particularly in the later sown fields. The yields per acre of the cereals were:

| | | |
|---|---|---|
| Oats | 40 | bushels |
| Barley | 30 | " |
| Peas | 21 | " |

The previous satisfactory experience with alfalfa was duplicated in 1922, both as a separate crop and in the regular seeding mixture. Red Clover injury was severe, and hay yields on the farm would have been very light had it not been for the strong growth of alfalfa. The mixture being used now is as follows:

| | | |
|---|---|---|
| Red Clover | 8 | pounds |
| Alfalfa | 6 | " |
| Timothy | 4 | " |
| Alsike | 2 | " |

Sweet Clover continues to be a highly satisfactory pasture and silage crop, while previous reports as to difficulty in curing it for hay have been substantiated again this year. Records of the cost of production of various farm crops have been kept this year, some of which are herewith submitted:

Kemptville Agricultural School in account with Corn Crop, 1922.

| Dr. | | Cr. | |
|---|---|---|---|
| By man labour throughout season, 489 hours at 20c | $97 80 | | |
| By horse labour throughout season, 805 hours at 10c | 80 50 | | |
| By seed, 3½ hours at $2.75 | 9 62 | To 85 tons silage at $4.00 | $320 00 |
| By fertilizer, ¾ value of 3,200 lbs. at $51.70 per ton | 62 04 | | |
| By rent of land, 8 acres at $5.00 | 40 00 | Debit balance | 113 96 |
| By 144 tons manure at ½ price, viz: $1.00 | 144 00 | | |
| | $433 96 | | $433 96 |
| | | Cost per ton $5 10 | |

KEMPTVILLE AGRICULTURAL SCHOOL IN ACCOUNT WITH MANGEL CROP, 1922.

| Dr. | | Cr. | |
|---|---|---|---|
| By man labour throughout season, 349 hours at 20c | $69 80 | | |
| By horse labour throughout season, 393 hours at 10c | 39 30 | | |
| By seed, 9 pounds at 75c | 6 75 | To 60 tons mangels at $6.00 | $360 00 |
| By fertilizer, ¾ of 1,200 lbs. of 4-8-4 at $51.70 | 23 27 | Credit balance | 160 88 |
| By rent of land, 3 acres at $5.00 | 15 00 | | |
| By manure, 45 tons at $1.00 | 45 00 | | |
| | $199 12 | | $199 12 |
| | | Cost per ton....$3 32 | |

KEMPTVILLE AGRICULTURAL SCHOOL IN ACCOUNT WITH SWEET CLOVER SILAGE, 1922.

| Dr. | | Cr. | |
|---|---|---|---|
| By total man hours 369.5 at 20c | $73 90 | | |
| By total horse hours 274 at 10c | 27 40 | | |
| By seed, 240 lbs. at 10c | 24 00 | To 55 tons silage at $4.00 | $220 00 |
| Rent of land, 12 acres at $3.00 | 36 00 | | |
| Tractor service, 2 days at $10.00 | 20 00 | Credit balance | 38 70 |
| | $181 30 | | $181 30 |
| | | Cost per ton....$3 29 | |

In regard to these results, as obtained this year, it may be noted that in connection with the corn crop, a heavy rain came just after the land was ready for planting, and it, consequently, did not go in in first-class shape. The stand was not that of a full crop, and the total yield was thereby reduced. More horse and man labour per acre was required this year than last to maintain and mulch and control the twitch grass of which there was some in the field.

Mangels again show themselves to be a profitable crop to grow, and seem to be indispensable in the dairy barn.

The cost per ton of sweet clover silage, is noticeably increased this year for two reasons: first, it was grown on the "Langstaff" farm which is in a very poor state of fertility, nothing but Sweet Clover would have yielded so well, but the yield per acre was considerably reduced below that obtained last year. Then again, the field was situated a long distance from the barns which materially increased the cost of handling. Even with these important factors operating against economically producing the crop, a profit can be shown. The market price placed upon sweet clover and corn are the same, although the feeding value of sweet clover is slightly higher.

In all probability, our cropping plans for this year will be guided somewhat by the results of cost accounts for the past two years. In that provision will be made regularly for the production of sweet clover for silage, the corn acreage will be somewhat reduced, the mangel crop increased, and more extensive use of alfalfa.

## Education for Girls.

The Course in Household Science for girls at the Kemptville Agricultural School was opened for the term on October 30th, 1922, with an attendance of nineteen.

About five and one-half months were spent by the instructor in Lanark county, with headquarters in the Agricultural office at Perth. Speeches were given several times at Women's Institute Conventions and meetings—talks and demonstrations for two U.F.W.O. Organizations. About fifteen Cookery Demonstrations were given at different places in the county. Several girls' clubs were assisted with programs and athletics, and always the Kemptville School was talked about, and advertised wherever possible.

Help was also given with planning School Fair programs, and in September assisted at seventeen school fairs in Leeds and Lanark counties; judged Cookery, Sewing, Art, School Fair Parades and Public Speaking.

## AGRICULTURAL DEVELOPMENT BOARD

For the first time a chapter under this head must be included in the report of the Department.

Following the legislation providing for new facilities for rural credits, the work of organizing a system of administration was very considerable. This has, however, been carried out and the Agricultural Development Board, which is authorized under the legislation to act as the administrative body, has completed one full year of operation.

As was to be expected, the inauguration of this system resulted in a very large number of enquiries, in all over 4000, during the year. The great majority of these did not come under the terms of the legislation, but the number is significant of the general interest in the subject. Up to the end of the fiscal year, 563 applications have been passed by the Board for Long Term loans, representing an aggregate of $2,024,505. These loans were distributed among the following purposes:

| | |
|---|---|
| Purchase of land | 47% |
| Erection of buildings | 14% |
| Settling Estates | 8% |
| Discharge of mortgages | 25% |
| Drainage | 6% |

It may be pointed out that for the first half of the year, the Act did not permit granting of loans to discharge mortgages. At the recent session of the Legislature, however, an amendment was made enabling the Board to grant loans for the removal of registered encumbrances up to 40% of the value of the security offered. As will be seen, this was taken advantage of in a considerable number of cases during the latter part of the fiscal year. There is no doubt but what this system has had the effect of making money available for farm development where it was not formerly readily available, no matter how good the security offered, and also has had the effect of stabilizing the rate of interest. Loans have been granted at 6%, repayable on the amortization plan of an equal amount of principal and interest each year, working out at a rate of $87.17 per $1,000 per annum. These are the minimum payments required, but the whole or any part may be discharged on any due date.

The loans were well distributed over the province; with three exceptions every county in Old Ontario was represented among the loans granted, the average loan in Old Ontario being $4,758. In New Ontario the average loan was $1,976. The legislation has been of special advantage to New Ontario. Money has been utilized in many cases for erecting buildings on farms which have been cleared by the applicants, and in some cases to discharge liabilities or purchase more land. Current rates being charged to settlers in New Ontario range from 8% to 10% with an odd case of as high as 12%. The settlers, therefore, have the double advantage of a material reduction in rate of interest and the availability of capital to make needed improvements on their properties. In practically all sections of New Ontario where thirty acres or upwards have been cleared, land is held at prices which compare very favourably with Old Ontario prices, and sales are being made frequently on this basis.

As no payments were due at the end of the fiscal year, there is nothing to report on this point. As a very careful inspection and complete investigation was made before any loan was passed, it is felt that the province has adequate security in the first mortgages taken.

The loans have been financed by the sale of bonds and debentures to the

Provincial Treasurer. The bonds are issued on security of the Board and of these there are only $200,000 outstanding. The debentures are issued on the security of the mortgages taken so that the loans advanced by the Treasurer are offset by tangible security and any additions made to the liabilities of the province are offset by the additions made to the credit and assets of the Province. Against the amount passed as mentioned above, the province holds first mortgages on good Ontario farm lands, aggregating $4,693,604 or more than double the amount being advanced. This is an indication that the province is well secured.

## Short Term Loans.

In some other provinces the administration of Long Term loans and Short Term loans has been carried on by separate administrative organizations. Here it was decided to combine the two for purposes of administration, as it was felt that this would work out much more satisfactorily, and more economically. The first year's experience confirms this expectation. Whereas the Long Term loans are made on the security of first mortgages, it is possible to operate from a central office and have adequate security for all monies advanced. Short Term loans, however, are made on notes and personal character to a large extent, and hence it is impossible to operate any such system from a central provincial office. Accordingly, the system of having local associations pass on such loans was adopted in the Act and this necessarily means slower development. In the first year, however, the following associations were formed and through them loans were granted to the amounts mentioned.

| Name of Associations. | Amount. |
|---|---|
| Howard (Kent County) | $13,300 00 |
| Balfour-Rayside (Sudbury) | 22,150 00 |
| Roxboro (Stormont) | 11,400 00 |
| Nelson (Halton) | 15,450 00 |
| Sault Ste. Marie (Algoma) | 6,500 00 |
| Cosby-Martland | 7,200 00 |
| Downie (Perth) | 15,250 00 |
| Ekfrid (Middlesex) | 17,275 00 |
| Esquesing (Halton) | 19,150 00 |
| Glanford (Wentworth) | 3,600 00 |
| Toronto (Peel) | 16,125 00 |
| Nassagaweya (Halton) | 15,760 00 |

Under the Act, each Association must include thirty or more farmers and the affairs of each Association are administered by a board of seven directors. The work of these local boards has been carried on much more expeditiously and smoothly than was feared by some at the outset. In practically every case, leading and respected farmers have agreed to serve on these local boards and this has proven a great asset. In connection with the amount of loans, it should be kept in mind that the Associations did not get organized until late in the fiscal year. In all cases, an individual statement of assets and liabilities was submitted by applicants for loans, and in practically every case there was a margin of visible security, as well as reliability of character. The Board has given considerable attention to the supervision of the work of these local Associations.

## WESTERN ONTARIO EXPERIMENTAL FARM

Owing to differences in soil and climatic conditions there has for some years past been a demand for an experimental farm in Southwestern Ontario. This year such an institution was established.

The Government obtained possession on March 1st, 1922 of what is known as the Brien farm, near Ridgetown. The farm consisted of 187 acres of tillable land; 100 acres being situated between the Pere Marquette and Michigan Central Railways and the balance between the Pere Marquette and, what is known as the Ninth Concession of Howard. About forty-five acres of the farm are within the Corporation.

The soils are of several different types; heavy clays, clay loams, sandy loams, gravelly sands, silt loams and black muck. This allows plenty of scope, so far as soil is concerned, for experimental work. Most of the black muck land had never been broken but was pastured.

The opportunities for drainage are excellent, Several years ago, some underdrains were installed but, upon examination, none of them were working with the exception of a municipal drain.

The buildings, composed of two barns, sheep pen, pig pen, combined tobacco and implement shed and one house, are situated on a ridge, which crosses the farm from East to West. There are also about fifty (50) apple trees, mostly spies, and an old peach orchard.

The first work was to purchase implements and horses. After considerable searching, seven horses were selected. The necessary men were secured, preference being given to returned soldiers; in fact, all of the men at the beginning were returned men.

The farm previously had carried large numbers of live stock and consequently was well up to the average in fertility but lacked something in cultivation. There were twenty (20) acres seeded to clovers, thirty-three (33) acres to wheat and the balance had to be cropped. The cropping was done, in order that the land might be most quickly brought into condition for experimental purposes rather than with the idea of making large immediate returns. Thirty-eight (38) acres were planted to oats, eleven (11) to barley, five (5) to potatoes, thirty (30) to corn, five (5) to sugar beets, five (5) to tobacco, fourteen (14) to beans, and about twenty-five (25) acres were in pasture, orchard, building sites, etc.

One eighteen (18) acre field of wheat, which promised very well in early April, had to be plowed up in June. Early in July, this was sown heavily with sweet clover. Potatoes, oats, beans, barley and corn were fair crops only. The oat fields were sown to sweet clover with the idea of soil fertilization and, with the exception of seven (7) acres, will be plowed in the spring of 1923. One field of corn was sowed late and was used principally as a cleaning crop. One field of pasture, where the soil was black muck, was broken in the month of August, and worked continuously. This will ultimately be ideal vegetable land, and was thoroughly underdrained during the fall.

Buildings.—The buildings were out of repair and some new buildings were required, in order to give necessary accommodation for carrying on the work. A grain barn 40 x 72, with 20 foot posts, with a horse stable in one end and a granary in the other, was erected. One of the barns was allowed to stand but the other was moved in order that the three buildings together made a closed barnyard, protected on the north, west and east and open to the south.

The barn, which was moved, was remodelled to be used for feeding cattle loose. The silo was moved and placed on a new foundation. A corn crib, with a capacity of 2,000 bushels, was built. A feed room with a covered feed platform for pigs, was commenced and will be completed in 1923. There is capacity for feeding 150 pigs, if necessary, or it may be divided into fifteen (15) pens when required. The residence was repaired.

### Experiments in Hog Feeding.

The principal experimental work was with swine. This work was undertaken because the question of the production of bacon hogs was prominently before the people. Southwestern Ontario being the greatest corn producing centre in Canada, they had followed the lead of the American corn States and produces the lard type hog. The bacon type hog, only, meets the requirements of the British market and the production of this particular type was in question and, in order that some information might be had on the subject under southwestern conditions, an experiment was outlined. The following questions immediately arose:—

(1) Can the thick, fat hog be improved and fed and thereby produce Wiltshire sides, which will meet the requirements of the British market?
(2) Can the so-called bacon breeds, and especially the Yorkshire, make gains as cheaply and as quickly as the thick, fat breeds, when fed under southwestern conditions?
(3) Will the bacon breeds, when fed upon at least 70% corn, produce Wilshire sides?
(4) Would it be advantageous to use Crossbred hogs for general production?

Twenty-one (21) lots of pigs were selected and placed in pens where plenty of shade was provided. Five (5) pens were fed during the finishing period, 70% corn, 3% oilmeal, 6% tankage and buttermilk. Eleven (11) pens were fed 60% corn, 3% oilmeal, 5% tankage and buttermilk. Five (5) pens were fed 60% corn, 5% tankage, 3% oilmeal and no buttermilk. The balance of each ration was ground oats. Each pig received daily practically one pound of freshly cut alfalfa. Pigs receiving buttermilk were given three pounds per day.

The breeds were represented as follows:—

| | | | | |
|---|---|---|---|---|
| Yorks | 4 | pens— | 14 | pigs |
| Durocs | 3 | " — | 12 | " |
| Tams | 4 | " — | 16 | " |
| Berks | 4 | " — | 12 | " |
| Chesters | 1 | " — | 4 | " |
| Poland China | 1 | " — | 4 | " |
| Hampshires | 1 | " — | 4 | " |
| York-Durocs | 1 | " — | 4 | " |

Corn was first introduced into the ration at from twelve to fifteen weeks of age, and it was gradually increased up to 60 and 70%. As the corn increased, the shorts and oats were decreased until finally the shorts were discontinued and the ration then consisted of corn, oats, oilmeal, tankage and buttermilk. The ration was balanced by the use of tankage. In the earlier part of the test, they were fed the meal dry with just the buttermilk on it but they had access to water at all times. Later on, as the pigs became more mature, they were fed a thick slop. Charcoal and salt were kept in front of them in separate boxes at all times and some sulphur was used in the food.

One pen of Duroc-Jerseys, of excellent quality, became ill shortly after arrival and, while they did not die, did not make any appreciable gain. Two

of these were taken to the abattoir and examined and appeared to have internal injuries. This accounts for three pens instead of four of this breed.

One pen, No. 8, the old-fashioned type of Duroc-Jersey was selected intentionally in order to compare it with the best type of Duroc obtainable, as exhibited in pen No. 4.

The Yorks were just a fair average of what good Yorkshires should be. The Tamworths were, with the exception of pen No. 2, a little short throughout. The Chesters were an excellent pen. The Poland Chinas consisted of three very fair pigs and one very poor one. One of the best ones became ruptured early during the experiment and it had to be slaughtered at an earlier date than it should have been. The Hampshires were fine in the bone and generally fine throughout. The Berks were below the average, and the results of this test can hardly be taken as a fair criterion of what the Berk breed may do.

The pigs did not feed uniformly; as they became finished, they were taken out of their particular pens, weighed and shipped to the Wilson Canadian Packing Company, Chatham. In one case, the hogs were held too long, which caused their grading to be lower than it otherwise would have been. The grading was done on the rail. A representative number of sides was sent to England to be graded and thereby served as a check on the experiment.

The following table was compiled, in order to throw some light on the questions, which were uppermost in the minds of the farmers of this section of the country.

| Pen Number Breed Number in each pen | Age at commencement of test | Age at completion of test | Weight at commencement of test | Weight at end of test | Gain per Pen | Cost of gain per Pen | Cost per Pound Gain | Grading |
|---|---|---|---|---|---|---|---|---|
| | days | days | pounds | pounds | pounds | $ c. | $ c. | |
| No. 1<br>4<br>York-Durocs | 93 | 180.75 | 50 | 187 25 | 549 | 27.92 | 5.08 | 1 Lean.<br>1 Prime.<br>2 Thick Smooth. |
| No. 2<br>5<br>Tams.... | 124 | 213.6 | 57.2 | 204.2 | 735 | 41.58 | 5.65 | 2 Leanest.<br>2 Prime.<br>1 Thick Smooth. |
| No. 3<br>4<br>Berks.... | 72 | 186 | 74.25 | 207 | 535 | 32.25 | 6.02 | 3 Prime.<br>1 Lean. |
| No. 4<br>4<br>Durocs... | 78 | 167 | 55 | 188.5 | 534 | 29.53 | 5.53 | 2 Leanest.<br>1 Lean.<br>1 Thick Smooth. |
| No. 5<br>4<br>Yorks... | 71 | 179 | 52.5 | 211.25 | 635 | 33.81 | 5.32 | 1 Leanest.<br>2 Lean<br>1 Prime. |
| No. 6<br>4<br>Tams... | 84 | 209 | 43 | 195.5 | 610 | 34.92 | 5.72 | 2 Lean.<br>2 Thick Smooth. |
| No. 7<br>4<br>Tams.... | 100 | 221.5 | 47.5 | 206.5 | 636 | 36.03 | 5.66 | 1 Lean.<br>3 Thick Smooth. |

| Pen Number<br>Breed<br>Number in each pen | Age at commencement of test | Age at completion of test | Weight at commencement of test | Weight at end of test | Gain per Pen | Cost of gain per Pen | Cost per Pound Gain | Grading |
|---|---|---|---|---|---|---|---|---|
| | days | days | pounds | pounds | pounds | $ c. | $ c. | |
| No. 8<br>4<br>Durocs... | 80 | 200.25 | 40.75 | 198.5 | 631 | 39.62 | 6.42 | 4 Thick Smooth. |
| No. 9<br>3<br>Berks.... | 76 | 198.66 | 38.3 | 215 | 530 | 28.27 | 5.33 | 1 Leanest.<br>1 Prime<br>1 Thick Smooth. |
| No. 10<br>4<br>Yorks.... | 74 | 185.25 | 45.25 | 206.75 | 646 | 34.79 | 5.38 | 3 Lean.<br>1 Thick Smooth. |
| No. 11<br>4<br>Hamp-shires.. | 69 | 201 | 29.5 | 180.25 | 603 | 36.37 | 6.03 | 1 Shop Hog<br>3 Thick Smooth. |
| No. 12<br>2<br>Berks.... | 67 | 164.5 | 42 | 176.5 | 269 | 16.67 | 6.19 | 1 Leanest.<br>1 Thick Smooth. |
| No. 13<br>4<br>Durocs... | pigs<br>Post- | all beca<br>mortem | me ill.<br>revealed | internal | injuries. | | | |
| No. 14<br>4<br>Chesters.. | 61 | 182.5 | 32.25 | 206.25 | 696 | 36.19 | 5.20 | 4 Thick Smooth. |
| No. 15<br>4<br>Poland Chinas | 60 | 187.3 | 42.25 | 182.25 | 560 | 36.34 | 6.49 | 1 Prime.<br>2 Thick Smooth.<br>1 Under Finished. |
| No. 16<br>3<br>Yorks.... | 58 | 183 | 34.66 | 198 | 557 | 27.30 | 5.57 | 1 Lean.<br>2 Leanest. |
| No. 17<br>3<br>Berks.... | ..... | ..... | 50.75 | 183 | 346 | 22.01 | 6.36 | 1 Lean.<br>2 Not Killed. |
| No. 18<br>4<br>Duroc-Jerseys | 70 | 187 | 55.75 | 210 | 617 | 34.89 | 5.65 | 4 Thick Smooth. |
| No. 19<br>3<br>Berks.... | 77 | 208 | 34 | 180.33 | 439 | 24.73 | 5.63 | 2 Thick Smooth.<br>1 Prime. |
| No. 20<br>3<br>Tams.... | 85 | 206.6 | 42.3 | 191 | 446 | 26.15 | 5.86 | 2 Prime<br>1 Thick Smooth. |
| No. 21<br>3<br>Yorks.... | 70 | 198.6 | 39.3 | 204.66 | 496 | 25.74 | 5.18 | 2 Leanest.<br>1 Thick Smooth. |

It is interesting to compare the cost between pen 4, pen 8 and pen 18, pen 8 being the old-fashioned Duroc-Jersey. They were one of the readiest feeding pens but, owing to their conformation, the cost was quite high.

Pens 6 and 7, Tamworths, were troubled a great deal with a cough and it seemed to take at least twice as long to get them started as it did any other pen, which should be attributed to the disease rather than to the breed. The balance of the pigs were easy to feed, giving no more than the ordinary trouble.

It is not good practice to draw conclusions from only one year's work where such a few hogs have been used, but it is worth while to note the results from a standpoint of cheapness of gain and of the grading. It will be noticed, while the pen of York-Durocs were the cheapest in gain, that a pen of Yorks stood second, Chesters, third, Yorks fourth, Berks fifth, Yorks sixth, Durocs seventh, Yorks eighth, Berks ninth, Duroc-Jerseys tenth and Tamworths eleventh. The matter of cheapness of gain, however, is one that has been practically settled, depending pretty much on the individuality of the pig. It is interesting to note, however, that the Yorkshire handled the 60 and 70% corn and made cheap gains; in fact, the bacon breeds have done as well as the thicker types.

In answer to question No. 1, it is noted in the grading that one pen of Duroc-Jerseys graded exceptionally well. A side from each pig was examined in England. It must be remembered, in connection with this pen, that they were, first, very long hogs; secondly, that they averaged 188½ lbs. only, when sold. All of the other Durocs dropped back into the thick, smooth class. It must not be thought that, because this one pen of exceptionally good Durocs produced two leanest and one lean, there is sufficient evidence to warrant the adoption of a thick, fat breed as a bacon breed, but, wherever Durocs of that particular type are, we cannot afford to overlook them. Practically all the other hogs of the lard type went into the thick, smooth class.

In answer to question No. 2, this year's work would indicate that the bacon breeds can be fed as cheaply as other breeds.

In answer to question No. 3, the indications are that the bacon breeds will consume 60 to 70% corn, and produce sides suitable for the British market.

During the slaughter test, it was noted that hogs killed from 180 lbs. to 200 lbs. produced fairly good carcasses throughout, provided the type was right at the start. But, when the weight increased over 200 lbs. the amount of fat on the back seemed to increase far out of proportion to the increase in weight regardless of breed.

Perhaps, instead of worrying about breeds at present, it would be better business to consider type only. Select a type and then choose the young breeding stock to conform as nearly as possible, and as the grading of hogs continues and as we learn more about the relationship existing between the live hog and the carcass, we will be better able to improve upon the type selected.

## Sugar Beets.

In conjunction with the Dominion Sugar Company, Chatham, several different kinds of sugar beet seed were planted. In the sugar beet section, two or three points are of importance, purity, germination, yield and sugar content. The results as given in the table below, indicate very clearly how necessary it is to have the very best seed obtainable.

| Name of Seed and where Grown | Tons of beets per acre | Per cent. Sugar in the beets | Purity in the pressed juice |
|---|---|---|---|
| British Columbia | 14.08 | 17.4 | 85.5 |
| Holland | 11.50 | 18.6 | 84.1 |
| Denmark | 11.50 | 16.4 | 84.3 |
| Great Western Sugar Co., Longmont | 13.48 | 16.0 | 84.5 |
| Home Grown, Waterloo | 11.50 | 15.4 | 84.6 |
| Experiment Station, Logan, Utah | 16.06 | 15.0 | 81.5 |
| U.S. Dept. of Agr. Sugar Investigation, Great Western Sugar Co | 15.67 | 16.3 | 84.0 |
| Scandinavian | 12.10 | 17.3 | 85.8 |
| U.S. Dept. Agr., Klein Wanzleben, Michigan grown | 14.08 | 17.6 | 82.2 |
| U.S. Dept. Agr., Dippe, Michigan grown | 13.48 | 15.4 | 82.6 |
| Home Grown, Chatham | 12.30 | 15.0 | 81.8 |
| U.S. Dept. of Agr., Alvarada, Michigan grown | 14.08 | 18.2 | 85.4 |
| Dachenfeldt | 14.48 | 14.6 | 81.9 |
| Horning | 12.30 | 16.2 | 80.3 |
| Klein Wanzleben Elite | 12.30 | 15.2 | 82.4 |

## Corn.

The work in corn was merely a test for a comparison of the production of individual ears. Ninety-eight (98) rows were planted on very uniform soil. The ear remnant plan was followed with the idea that if any outstanding ears were discovered they could be returned to the grower, if they so desired. The result are as follows:—

| | No. of row. | Yield per Acre. | | | | | No. of row. | Yield per Acre. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Essex No. 1... | 1 | 98 | bu. | 58 | lbs. | Bailey..... | 51 | 96 | bu. | 46 | lbs. |
| | 2 | 105 | " | 49 | " | | 52 | 108 | " | 19 | " |
| | 3 | 96 | " | 58 | " | | 53 | 96 | " | 31 | " |
| | 4 | 88 | " | 33 | " | | 54 | 104 | " | 29 | " |
| | 5 | 101 | " | 43 | " | | 55 | 96 | " | 58 | " |
| | 6 | 131 | " | 56 | " | | 56 | 88 | " | 65 | " |
| Bailey..... | 7 | 131 | " | 43 | " | | 57 | 90 | " | 10 | " |
| | 8 | 129 | " | 70 | " | | 58 | 81 | " | 37 | " |
| | 9 | 123 | " | 34 | " | | 59 | 98 | " | 50 | " |
| | 10 | 128 | " | 15 | " | | 60 | 87 | " | 27 | " |
| | 11 | 116 | " | 30 | " | | 61 | 88 | " | 65 | " |
| | 12 | 110 | " | 11 | " | | 62 | 84 | " | 43 | " |
| | 13 | 93 | " | 9 | " | Pennsylvania .. | 63 | 52 | " | 15 | " |
| | 14 | 105 | " | 51 | " | | 64 | 63 | " | 61 | " |
| | 15 | 97 | " | 5 | " | | 65 | 57 | " | 65 | " |
| | 16 | 98 | " | 56 | " | | 66 | 54 | " | 52 | " |
| | 17 | 86 | " | 31 | " | | 67 | 79 | " | 56 | " |
| | 18 | 92 | " | 21 | " | | 68 | 74 | " | 42 | " |
| | 19 | 93 | " | 52 | " | White Cap.... | 69 | 65 | " | 61 | " |
| Gold Nugget... | 20 | 113 | " | 70 | " | | 70 | 79 | " | 6 | " |
| | 21 | 115 | " | 43 | " | | 71 | 78 | " | 66 | " |
| | 22 | 85 | " | 11 | " | | 72 | 79 | " | 53 | " |
| | 23 | 77 | " | 64 | " | | 73 | 68 | " | 59 | " |
| | 24 | 80 | " | 69 | " | | 74 | 74 | " | 30 | " |
| | 25 | 106 | " | 14 | " | Yellow..... | 75 | 73 | " | 34 | " |
| | 26 | 85 | " | 44 | " | | 76 | 62 | " | 29 | " |
| | 27 | 84 | " | 46 | " | | 77 | 52 | " | 66 | " |
| | 28 | 114 | " | 48 | " | | 78 | 80 | " | 44 | " |
| | 29 | 106 | " | 27 | " | | 79 | 64 | " | 2 | " |
| | 30 | 104 | " | 62 | " | | 80 | 67 | " | 16 | " |
| White Cap.... | 31 | 93 | " | 10 | " | White Cap.... | 81 | 64 | " | 51 | " |
| | 32 | 82 | " | 6 | " | | 82 | 74 | " | 37 | " |
| | 33 | 82 | " | 6 | " | | 83 | 59 | " | 70 | " |
| | 34 | 107 | " | 63 | " | | 84 | 75 | " | 52 | " |
| | 35 | 114 | " | 39 | " | | 85 | 82 | " | 39 | " |
| | 36 | 93 | " | 37 | " | | 86 | 74 | " | 42 | " |
| | 37 | 108 | " | 11 | " | Golden Glow .. | 87 | 76 | " | 21 | " |
| | 38 | 96 | " | 68 | " | | 88 | 81 | " | 25 | " |
| | 39 | 96 | " | 45 | " | | 89 | 72 | " | 31 | " |
| | 40 | 113 | " | 56 | " | | 90 | 69 | " | 10 | " |
| | 41 | 109 | " | 5 | " | | 91 | 95 | " | 27 | " |
| | 42 | 124 | " | 5 | " | | 92 | 105 | " | 44 | " |
| | 43 | 111 | " | 62 | " | | 93 | 73 | " | 34 | " |
| | 44 | 110 | " | 12 | " | | 94 | 104 | " | 39 | " |
| | 45 | 115 | " | 69 | " | | 95 | 23 | " | 16 | " |
| | 46 | 122 | " | 35 | " | | 96 | 71 | " | 7 | " |
| | 47 | 132 | " | 28 | " | | 97 | 91 | " | 52 | " |
| | 48 | 129 | " | 54 | " | | 98 | 102 | " | 50 | " |
| | 49 | 91 | " | 13 | " | | | | | | |
| | 50 | 110 | " | 68 | " | | | | | | |

## Potatoes.

A small experiment with seed potatoes, which were grown in different parts of Canada, was tried. This work was done in conjunction with the Agricultural representative of the county. The same area of each variety was planted. It is quite interesting to note the difference in the amount of disease, as well as in yield.

| | Total lbs. | Marketable lbs. | Diseases |
|---|---|---|---|
| Green Mountain (Old Ontario) | 151 | 75 | 25% |
| Irish Cobbler (Old Ontario) | 193 | 103 | 42½% |
| Green Mountain (Prince Edward Island) | 195 | 143 | 5% |
| Rural New Yorker (Northern Ontario Dooley) | 140 | 81 | Free |
| Irish Cobbler (Nova Scotia) | 222 | 160 | 6% |
| Rural New Yorker (Old Ontario) | 196 | 98 | 10% |
| Irish Cobbler (Northern Ontario) | 265 | 180 | 20¼% |
| Green Mountain (Northern Ontario) | 264 | 166 | 4% |
| Green Mountain (Ridgetown) | 218 | 96 | 9½% |

The growing of early potatoes is a stable industry and the securing of good seed is one of the most important factors. Up to date, a great deal of seed has been imported from New Brunswick. Last summer, it was very noticeable that some carloads were very satisfactory while, in other cases, men lost as high as thirty to forty per cent. of their crop from disease. High freight rates have an important bearing on the cost of seed but where the variation in yield amounts to 72 bushels per acre, or even 50 bushels per acre, it is an excellent investment for the grower to demand and pay the difference in price for certified seed.

## Tobacco.

Five (5) acres of tobacco were raised as a commercial crop only, with no experimental work attached.

## General Improvement.

The internal fences were pulled down in order that the farm might be properly laid out for experimental work. The land between the two railways will be divided into three strips 40 rods long north and south, and the remainder will be left for general crop in rotation. These fields then may be used for producing general crops or for experimental work in fractions or multiples of an acre. A main road will be built north and south and narrow roads will divide the fields. The cleaning up process included the removal of what is known as the Simpson homestead, consisting of an old house and the foundation of a bank barn. Preparation has been made for the planting of permanent shrubs and windbreaks.

## Apiary.

An apiary of fifty (50) colonies was established by the Agricultural Department of the Ontario Agricultural College for the express purpose of rearing Queens for sale. The result of this movement was very satisfactory. The value cannot be measured this past season by the number of queens or the

amount of honey produced but rather by the co-operation between the beekeepers in the surrounding country and the manager of the Apiary. An excellent foundation has been laid for extension work in beekeeping, using the farm as headquarters.

### Extension Work.

Extension work was given consideration. Many growers of early potatoes were more or less beginners and were somewhat exercised about the marketing. Under the conditions, it appeared best to form an Association and market co-operatively. This took five weeks of work and, after the Association was organized, considerable time was given to assist those who had the work in charge.

# Ontario Department of Agriculture

## FORTY-EIGHTH ANNUAL REPORT

OF THE

# Ontario Agricultural College

AND

# Experimental Farm

# 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

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1923

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### FIELD HUSBANDRY

A. W. Mason, B.S.A., Assistant Experimentalist
A. E. Whiteside, Plant Selection

### HORTICULTURE

C. C. Eidt, B.S.A.

### POULTRY

E. S. Snyder, B.S.A.

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To His Honour Henry Cockshutt,
*Lieutenant-Governor of the Province of Ontario.*

May It Please Your Honour:

I have the honour to present herewith for your consideration, the Forty-eighth Annual Report of the Ontario Agricultural College and Experimental Farm, for 1922.

Respectfully submitted,

MANNING W. DOHERTY,
*Minister of Agriculture.*

Toronto, 1923.

# FACULTY OF INSTRUCTION

AND

# LABORATORY STAFF

---

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[illegible] J. Guard, B.S.A. ..... Demonstrator in Farm Economics
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Margaret Reid, B.H.E. ..... Instructor in Household Management

# Ontario Agricultural College
## and Experimental Farm
## 1922

*To the Honourable the Minister of Agriculture.*

SIR:—I beg to submit herewith my Third Report as President of the Ontario Agricultural College.

### The New Dairy Building.

The handsome new dairy building has been opened this year for class-room instruction and practical work. The old dairy building, opened in 1894, is now occupied by the Department of Rural Economics. The new building, of tapestry brick with stone trimmings, provides, both in floor space and in mechanical equipment, for instruction in all branches of dairy manufacture, including ice cream, condensed milk, and powdered milk, as well as for research and experiment. With a dairy chemist and a dairy bacteriologist in their respective departments to co-operate with the dairy department, all problems of dairy manufacture that need scientific equipment and trained investigators may be dealt with as they arise. The building will be formally opened on January 9th, 1923.

### Alterations.

Some valuable improvements have been made in the residences and the dining-hall. Two years ago the kitchen and the dining-room in Macdonald Hall were closed, and all the students, men and women, are now boarded in the large dining-hall. The parts of Macdonald Hall formerly used as kitchen, pantries, and store-room, have been made into a dormitory. There is now accommodation in Macdonald Hall for nearly one hundred and sixty residents.

A cafeteria and lunch-room has been opened on the ground floor of the main dining-hall. The necessary space was found by appropriating half of the store-room and an unused wash-room adjoining. Visitors, occasional students, and dinner parties for college classes, are now provided for without interfering with the routine in the main dining-hall. The new cafeteria can seat one hundred and fifty.

The much needed refrigerators have been installed in the dining-hall this year. Four large chambers on the ground floor and two smaller chambers upstairs are cooled by mechanical refrigeration from a central ammonia-expansion plant.

### Attendance of Students.

The courses at the Macdonald Institute—the two-year Normal course, the two-year Associate course, the two-year course in Institutional Management, the Home-maker Course, and the three months' courses—have always been sufficiently suited to the various needs of young women for home economic education to keep the residence filled, and the capacity of Macdonald Hall practically limits the number we can accept. This year, even with the increased space provided in the Hall, the waiting list is as large as ever.

The total capacity of the three residences of the college is almost exactly equal to the capacity of the dining-hall, and the residences and the dining-hall are filled this year. However desirable it may be to reach the greatest possible number of students, it would seem that we have the right numbers now for resident teaching.

In considering the question of attendance of students, at the regular two-year and four-year courses, we should recognize the fact that when the utmost practicable expansion of resident teaching shall have been attained, the college even then will be reaching, by this direct means, less than 1 per cent. of the young men of the Province who will be the farmers of the next generation. It is entirely beyond the capacity of one central institution in this or in any other province of Canada to give, within its own walls, an extensive course in agriculture to any more than the merest small proportion of those who should receive the benefit of that teaching.

What then? Shall we multiply agricultural colleges, in the hope of reaching a reasonable proportion of prospective farmers? Apart from the prohibitive cost to the Province, the time and money expended by each student living away from home for two or more seasons would prevent all but a few from taking advantage of this opportunity. The same objection applies to the establishment of agricultural schools. Farming is not sufficiently profitable, for the present at any rate, to enable as many as should to attend agricultural schools for vocational training.

## Extension of Agricultural Education.

Vocational training in agriculture to be sufficiently effective, should not be centralized. It must be offered in various forms, as widely distributed as possible among the rural districts. To be sufficiently effective, it should be as widely distributed and as easily attained as public school education. Outside means of training and education should be stressed to the utmost.

First, the opportunity afforded by the public schools should be applied in every school in the country districts, and in every school in the villages and small towns. In this project, the Department of Education for the Province is already doing a notable work in the training of teachers for agricultural instruction, and in encouraging the teaching of agriculture in the public schools. Over four hundred teachers attended the six weeks' course at the Agricultural College last summer.

This training at the Agricultural College, however, is not adequate to meet the requirements. At best, it only supplements the present deficiencies of normal school training. It is optional on the part of the teachers whether they take advantage of the course or not. Not six weeks only, but a full year's training should be provided at the fountains of teacher training, the normal schools. Every normal school in the Province, as well as the college of education, should have on its staff of teachers a trained teacher of agriculture, who is proficient not only in the principles of teaching, but in the subject matter which can be taught under the head of public school or high school agriculture.

In the meantime it is recommended that the proposal to establish a normal school at the Agricultural College should be put into effect without delay. The Agricultural College is prepared to co-operate, when this school shall be established, by placing its most skilful teachers at the disposal of the normal school, to give occasional instruction in the teaching of agriculture.

A capital move in agricultural extension was inaugurated in the Department of Agriculture two years ago, at your suggestion. Courses in agricultural instruction, including marketing and farm engineering, have been held under the

immediate supervision of the agricultural representatives, and extending over several weeks. It is hoped that these courses will be held at several points in every county.

What part the Agricultural College should take in these extension methods, is now to be considered. There is first the two-year course in agricultural science, which has been made as effective as the college staff know how to make it. Those who take this course expect, for the most part, to follow farming as an occupation, and should, when sufficiently established in their respective communities, become leaders in agricultural practice and in rural living.

The College will continue, and extend in every possible way, the short courses that have been held at the College every year for twenty years. These do not deal in courses so much as in subjects. Several hundreds of farmers, young and old, have been coming to Guelph every winter in January and February to receive special instruction, and to discuss problems in the branches of farming in which they are severally interested—live stock, crops, poultry, fruit-growing, vegetable-growing, bee-keeping, farm power and dairying.

The College hopes that the Department of Education will continue its summer courses at the Agricultural College. Unmistakable evidences of the value of this course have come to hand. Teachers have not only gained a knowledge of agricultural practices and principles, but have acquired also the rural point of view, have learned how interesting and intellectually stimulating are the processes of agriculture. When this point of view has been acquired, it can be communicated to those whom they teach, and a new pride and a new interest awakened in all that belongs to country life.

Perhaps it will not be considered amiss to say that the significant and important functions of the College, with its expensive equipment of laboratories, apparatus, and trained scientists, are two: to provide a sound thorough four-year course: and to conduct scientific investigations in agriculture.

In every county of Ontario may be found evidence of the remarkable influence of the agricultural representatives. The opportunities for effective work of the most salutary kind are boundless. We hear of the value of their work in the improvement of farm stock, in farm crops, in orcharding, in the control of weeds and insect pests, in school fairs, in the organization of the young people for mutual improvement. And the interesting fact is, these reports of the work of agricultural representatives come from business men and professional men in towns, which adds another item to the credit of the representatives, that they are awakening townspeople to the significance and the importance of agriculture. The extent of the representative's influence is measured by the breadth and accuracy of his technical knowledge, his enthusiasm, tact, and personality.

These representatives are graduates of the Agricultural College. Through their activity, the College has found the best means of close contact with the farmer and his problems. So far as actual effect on farming practice and rural living is concerned, the representative is much more influential as such than he would be, if, he were settled as a farmer in any part of his county. And that is not to disparage the influence of the good farmer. But the example of the farmer's good practice is confined to a narrow neighbourhood, and his time for extension work, if he is a good farmer, is small. The influence of the representative is, or should be, county-wide, and his whole time is given to extension work.

It is now accepted as an axiom that it is the business of the Department of Agriculture through its various branches to do for the farmer, and hence for the public, what he cannot do for himself, either individually or through his organizations.

An accepted duty of the College, as a branch of the Department of Agriculture, is to conduct scientific research in agriculture, looking to the control of weeds, insects and diseases, which, if not controlled, would diminish or destroy the product of the farmer's labour. Also the work of the College is to improve farm crops and animals by breeding and selection. A more recent understanding of the function of the Agricultural College assigns to the College the work of investigating general systems of farm management, marketing methods, and conditions of rural living. As described in the report of the Departments of the College, some of the investigations conducted during the current year are:

The effect of feeding sweet clover to dairy cows.
Plant breeding with several vegetable crops.
Plant breeding with varieties of farm crops.
Soil improvement, by fertilizing and drainage.
Testing 1922 flour for bread making.
Examining and reporting diseased specimens of plants and animals.
Purity tests of commercial seeds.
Investigating new plant diseases.
Demonstrating the value of good breeding for producing beef.
Nutrition experiments in rearing chicks.

### Investigating the Production and Marketing of Cheese—Investigating the Corn-borer, and other Insect Pests.

It is obvious that these kinds of intensive investigations require trained men to conduct them if the results are to be of any practical value. Moreover, the investigators must be acquainted not only with scientific processes of investigation, but with farming processes as well, for control methods that are to be recommended must fit in with practicable farming methods. An academically-trained entomologist can investigate the life-history of the corn-borer, but he would be at a loss to recommend methods of control that the farmer could practise. It is, therefore, one of the accepted duties of the Agricultural College to train men for investigation in agricultural science. As agriculture becomes more advanced and specialized, investigational work becomes more and more important.

### Country Life Conference.

In November, it was my privilege to attend the conference of the Country Life Association of America, and to give an address at the conference banquet on the subject "Country and City." The particular subject of the conference was "Rural Education." Some of the topics discussed were: "Handicaps of the Rural Child": "National Responsibilities for the Improvement of Rural Education": "Adult Education in the Country Community": "Economic and Social Education": "Effective Rural Leadership."

### Changes in the Staff.

In April, Professor Crow retired as head of the Department of Horticulture, and was succeeded by Mr. A. H. McLennan, Vegetable Specialist for the Province.

In September, Professor Sackville resigned to become head of the Department of Animal Husbandry at the University of Alberta. Mr. J. C. Steckley, district representative for the county of York has been appointed to the position vacated.

I regret to report that Dr. C. A. Zavitz was obliged, in April, to ask for six months' leave of absence on account of ill-health. At the end of the six months, the leave was extended to a year. His physicians have hope that his health

will be sufficiently restored by the end of the year of leave to allow him to assume active duties again.

Mr. Oswald McConkey has been appointed to the Department of Field Husbandry, Mr. G. L. Jarvis to the Department of Apiculture, and Mr. G. E. Raithby to the Department of Animal Husbandry.

## Attendance.

In view of the general conditions throughout the country, the attendance in our various courses has been maintained to a remarkable degree.

The following are the figures in each course held throughout the year. Figures for general course include students in attendance during the winter term of 1922, and the new students of the fall term.

| | | |
|---|---|---|
| General Course | 556 | |
| Specialists in General Course Work | 9 | |
| Dairy Courses | 182 | |
| Stock and Seed Judging | 101 | |
| Poultry Raising | 42 | |
| Horticulture Courses | 82 | |
| Apiculture | 95 | |
| Drainage and Drainage Surveying | 5 | |
| Farm Power | 81 | |
| | | 1,153 |
| Domestic Science (at Macdonald Institute) | | 396 |
| Summer Courses: | | |
| High School—first year, 27; second year, 33 | 60 | |
| Public School Teachers, first year | 232 | |
| Public School Teachers, second year | 178 | |
| School for Rural Leadership | 93 | |
| | | 563 |
| Total | | 2,112 |

## ANALYSIS OF COLLEGE ROLL (GENERAL COURSE), 1922.

### From Ontario.

| | | | | | |
|---|---|---|---|---|---|
| Algoma | 3 | Huron | 6 | Perth | 11 |
| Brant | 11 | Kent | 4 | Peterborough | 3 |
| Bruce | 10 | Lambton | 12 | Prescott | 3 |
| Carleton | 45 | Lanark | 9 | Prince Edward | 1 |
| Dufferin | 3 | Leeds | 5 | Rainy River | 1 |
| Dundas | 5 | Lennox and Addington | 2 | Renfrew | 1 |
| Durham | 5 | Lincoln | 21 | Russell | 5 |
| Elgin | 8 | Middlesex | 23 | Simcoe | 16 |
| Essex | 7 | Muskoka | 7 | Thunder Bay | 6 |
| Frontenac | 7 | Nipissing | 4 | Temiskaming | 2 |
| Glengarry | 4 | Norfolk | 6 | Victoria | 2 |
| Grenville | 5 | Northumberland | 3 | Waterloo | 11 |
| Grey | 9 | Ontario | 10 | Welland | 1 |
| Haldimand | 9 | Oxford | 18 | Wellington | 49 |
| Halton | 10 | Parry Sound | 2 | Wentworth | 13 |
| Hastings | 3 | Peel | 9 | York | 59 |
| | | | | Total from Ontario | 469 |

### From Other Provinces of the Dominion.

| | | | | | |
|---|---|---|---|---|---|
| Alberta | 6 | Nova Scotia | 16 | Saskatchewan | 7 |
| British Columbia | 19 | Prince Edward Island | 2 | | |
| New Brunswick | 8 | Quebec | 1 | Total from other Provinces | 59 |

### From Other Countries.

| | | | | | |
|---|---|---|---|---|---|
| British West Indies | 2 | England | 14 | U.S. of Colombia | 1 |
| Ireland | 2 | South Africa | 1 | | |
| Japan | 1 | Switzerland | 1 | Total from other Counties | 28 |
| New Zealand | 1 | U.S.A. | 5 | | |

### Ages and Religious Denominations.

The limits of age in the General Course, 1922, ranged from 18 to 41 years. The average age was 22.

| | | | | | |
|---|---|---|---|---|---|
| Anglican | 117 | Evangelical | 1 | Methodist | 176 |
| Baptist | 31 | Friends | 4 | Presbyterian | 185 |
| Congregational | 11 | Lutheran | 4 | Roman Catholic | 17 |
| Disciples | 7 | Mennonite | 1 | Unitarian | 2 |
| | | | | Total | 556 |

## DEGREES AND DIPLOMAS IN AGRICULTURE.

The following students graduated in 1922 with the degree of Bachelor of the Science of Agriculture (B.S.A.)

### Agricultural Option.

Alp, Herbert Howard, Granton, Ont.
Archibald, Arthur, Box 282, Seaforth, Ont.
Armstrong, Arthur Edward, Ashworth, Ont.
Armstrong, Thomas Maughan, 56 Ottawa St., St. Catharines, Ont.
Bates, James MacFarlane, R.R. No. 5, Hamilton, Ont.
Beatty, Russell Garnett, Box 76, Port Hope.
Bernal, Washington, Bogota, Colombia, S.A.
Brennand, Thomas William, 37 Forman Ave., Toronto, Ont.
Broughton, Charles Edward, Whitby, Ont.
Brown, James Ewart, R.R. No. 1, Barrie.
Chilcott, Ernest Baldwin, Ancaster, Ont.
Clarry, Angus Gordon, Locust Hill, Ont.
Claus, Leon Henry, Ridgeway, Ont.
Clemens, Harold Ronald, 48 Rich Ave., Galt, Ont.
Cockburn, Alexander Beattie, R.R. No. 1, Puslinch, Ont.
Coon, Wylie Ormond, Elgin, Ont.
Davidson, John Gordon, R.R. No. 4, Kemptville, Ont.
Dewan, Patrick Michael, 68 Oxford St., Guelph, Ont.
DuToit, Alphonse George Spafford, "Rysell," Melbourne Rd., Kenilworth C.P., S.A.
Edwards, John Worden, Duncan, B.C.
Emigh, Gordon Martin, R.R. No. 2, Burgessville, Ont.
Fidlar, David Gilbert, c/o Dept. of Agriculture, Regina, Sask.
Forman, K. W., O.A.C., Guelph, Ont.
Fraser, Norman McTavish, Merivale, Ont.
Gray, Joseph Armine, Dept. of Agriculture, Regina, Sask.
Greaney, Francis Armine, R.R. No. 2, Mountain, Ont.
Griffiths, John Theodore, R.R. No. 1, Fonthill, Ont.
Hanlon, Leamon Houston, Sydenham, Ont.
Hart, Douglas Hamilton, R.R. No. 3, Woodstock, Ont.
Hartley, Harry Mansuel, R.R. No. 3, Woodstock, Ont.
Hocking, Roy Almer, R.R. No. 1, Cromarty.
Karn, Freeman Mackay, R.R. No. 1, Woodstock, Ont.
Kay, William James Benne, O.A.C., Guelph.
Knowles, George, Fibre Division, Exp. Farm, Ottawa, Ont.
Lindala, George James Constantine, 23 Alcorn Ave., Toronto, Ont.
Lowrie, William James, Millbank, Ont.
Macarthur, Kenneth, 313 Piccadilly St., London, Ont.
Mackay, John William, Fitzroy Harbour.
McLoughry, Elliot Irwin, R.R. No. 4, Markdale, Ont.
McMullen, William Stanley, R.M.D. 1, Hamilton, Ont.
Meek, Charles Murray, Dept. of Agric., Walkerton, Ont.
Oldfield, Richard Ernest, R.R. No. 1, Inglewood, Ont.
Patton, George Ernest, Motion Picture Bureau, 46 Richmond St., Toronto.
Pawley, John Lloyd, R.R. No. 1, Brampton.
Pearsall, Luke Wyndham, Oro Station, Ont.
Pineau, Edmund Flavien, 343 St. George St., Moncton, N.B.
Raithby, George Elwin, O.A.C., Guelph.
Richardson, Wentworth Snedden, Woodroffe, Ont.
Ripley, Philip Oscar, Field Husb. Div., C.E.F., Ottawa, Ont.
Rogers, Russell John, Dept. of Agriculture, Newmarket, Ont.
Ross, Fraser Adam, Department of Agriculture, Petrolia, Ont.
St. John, James Cameron, 1155 King St. W., Toronto, Ont.
Shaw, James Horace, R.R. No. 2, Hespeler.
Sheppard, Edwin Reginald, Aurora, Ont.
Shore, Frederick Richard, Belvoir Farm, Delaware, Ont.
Sibbick, Glendon Ralph, Richwood, Ont.
Springstead, Arthur, Department of Agriculture, London, Ont.
Stewart, Colin Henry, Box 12, Eglinton.
Stott, Reginald Douglas, 29 Summerhill Gardens, Toronto, Ont.
Thomas, Fletcher Stewart, Department of Agriculture, Markdale, Ont.
Thompson, John Wesley, Collegiate Institute, Saskatoon, Sask.
Throop, Albert Burton Cyrus, Tower Farm, Bewdley, Ont.
Tolton, Bertram Edward, 159 Perth St., Guelph, Ont.
Walsh, Frederick Waldemar, R.R. No. 2, Moncton, N.B.

Watson, Arthur Wallace, 181 Fourth Ave. Ottawa, Ont.
Webster, Frederick John, 37 James St. E., Brockville, Ont.
Western, Hubert Upton, Wainwright, Alta.
White, Ralph Edward, Department of Agriculture, Chatham, Ont.
Whitelock, James Earl, Dept. of Agriculture, Brampton, Ont.
Wildman, Edward Ernest, Preston, Ont.
Wilson, Harold Clifford, R.R. No. 1, Delhi.
White, S., 112 Courcelette Rd., Toronto.

### Horticultural Option.

Cairnie, Gordon Child, Coaticook, P.Q.
Cody, Walter Bruce, 55 Wentworth St. S., Hamilton, Ont.
Cooke, Harold Ernest, Cataraqui, Ont.
Crews, Kenneth William, Trenton, Ont.
Edwards, Miss Melissa Sarah Thankful, Dominion Exp. Farm, Rosthern.
Graham, Miss J. C., O.A.C., Guelph, Ont.
Hancock, Marcus Leslie, c/o G. M. Darrow, Glendale, Md., U.S.A.
Heming, Miss Frances Elizabeth, 84 Bronson Ave., Ottawa, Ont.
Nelles, Malcolm Summer, Box 295, Grimsby.
Purdy, John Colin, c/o Lake Shore Country Club, Lake Shore Rd., Toronto.
Snyder, Grant Bingeman, Horticultural Dept., Mass. Agr. College, Amherst, Mass.
VanEvery, William Stanley, Welland, Ont.

### Biology Option.

Arnold, Gordon Ivo, 549 Sherbourne St., Toronto, Ont.
Curran, G. H., Dept. of Entomology, Univ. of Kansas, Lawrence, Ka.
Frith, Rowley Campbell, Westboro, Ont.
Garlick, William Gilbert Peterkin, Vineland Station, Ont.
Hurst, Richard Rankin, O.A.C., Guelph.
Painter, Richard Harold, 70 Strathcona Ave. S., Hamilton, Ont.
Stirrett, George Milton, Department of Entomology, Purdue Univ., Lafayette, Indiana.
Twinn, Cecil Raymond, 10 Menzie St., Niagara Falls, Ont.

### Dairy Option.

Hamilton, Fred William, c/o Sask. Co-operative Creamery Co., Regina, Sask.
Harley, Arby Wilfred, c/o Martin Milk Products, Ltd., Welland.
Jamieson, Morley Craig, c/o Dairy Commissioner, Dept. of Agric., Winnipeg, Man.
Laing, Herbert Lawrence, Silverwoods City Dairy, Chatham, Ont.
Quirie, Ross James, Delaware, Ont.
Shutt, Donald Bethune, Manitoba Agric. College, Winnipeg, Man.
Sutherland, John Roderick, Dept. of Agriculture, Fredericton, N.B.
Toner, William Gerald, 9 Paisley St., Guelph.
Wasson, Frederick Cleveland, Regina, Sask.
Western, Eric Austin, Windermere, Ont.
White, Oliver Henry Johnston, 5 Douglas St., Stratford, Ont.

### Apiculture Option.

Munro, Jonathan Alexander, 134 Belgrave St., Montreal, Ont.
Shield, Thomas Harold, 153 Benson Ave., Peterborough, Ont.
Waugh, Richard Frederick, 26 Broadway Ave., Ottawa, Ont.

### Chemistry and Bacteriology Option.

Chesley, Edward Turguand, c/o The Globe, Toronto, Ont.
Cline, Courtland Alexander, O.A.C., Guelph.
Hammersley, Alfred Sheddon, c/o Sask. Co-operative Creameries Co., Regina, Sask.
Hastings, Robert John, Tyee Siding, E. & N. Railway, Vancouver Is.
Jamieson, Harold Williams, College Ave. W., Guelph, Ont.
Renwick, Herbert Lewis, Hespeler, Ont.
Whiteside, Albert Gordon Owen, O.A.C., Guelph, Ont.

### Chemistry and Physics Option.

Ziegler, Walter Tyson, 116 Grove St., Tarrytown, N.Y.

### Bacteriology Option.

Chamberlain, Gerald Cleveland, 166 Clemow Ave., Ottawa, Ont.
Smith, Paul Westmore Pompet, c/o Dept. of Agriculture, Madison, Wis.

## RECIPIENTS OF ASSOCIATE DIPLOMAS, 1922.

V. A. Alexander, 77 Lees Ave., Ottawa, Ont.
F. W. Allmen, Lausanne, Switzerland.
F. Ross Armstrong, 227 Carling Ave., Ottawa.
Herbert L. Atkinson, R.R. No. 4, Guelph.
Arthur R. Bach, 139 Glengrove Ave., Toronto, Ont.
Henry M. Baron, 642 Bronson Ave., Ottawa.
Frank H. Barnsley, "Oamington," 320 Hagley Rd., Edgbaston, Birmingham, England.
Thomas J. Batten, Merritt, B.C.
A. G. Beattie, 707 Queen's Ave., London, Ont.
Douglas M. Beattie, Seaforth, Ont.
H. Ernest Booth, 264 Perth St., Brockville.
E. G. Bouis, Mt. Washington, Maryland.
Charles H. Bratt, North Malden, Ont.
G. G. Cameron, 115 Goulbourn Ave., Ottawa.
J. J. Chisholm, Vankleek Hill, Ont.
Samuel Cole, Westboro, Ont.
F. H. Copeland, R.R. No. 2, Smithville, Ont.
R. F. Crossgrove, Copper Cliff.

J. A. Dawson, R.R. No. 1, Britannia, Ont.
Robert L. Demaray, R.R. No. 2, Dorchester.
Herbert A. Derby, Ettyville, Ont.
J. R. Dobie, R.R. No. 4, Seaforth, Ont.
L. H. Doering, c/o W. H. Cleghorn, Elmira.
Hugh C. Elliott, R.R. No. 7, Galt, Ont.
Oral E. Evans, 34 Highview Crescent, Toronto, Ont.
Elmer J. Parrish, R.R. No. 7, Lucknow, Ont.
William J. Ford, R.R. No. 1, Neustadt, Ont.
Kenneth W. Forman, O.A.C., Guelph, Ont.
Henry N. Frampton, Winchester, Eng.
James Gibbard, 657 Logan Ave., Toronto.
Robert N. Gowanlock, R.R. No. 3, Chesley.
George M. Gray, R.R. No. 2, Listowel, Ont.
Clarence V. Hamil, R.R. No. 5, Blenheim.
Frederick W. Hamilton, O.A.C., Guelph.
Clarence O. Hand, R.R. No. 2, Stittsville.
A. Desmond Hember, 54 Parkview Mansions, Toronto, Ont.
Frances E. Heming, 84 Bronson Ave., Ottawa, Ont.
E. F. Hickling, Box 1096, Barrie, Ont.
K. C. Hill, R.R. No. 1, Burgessville, Ont.
George F. Hinrichs, No. 2 Fairway Close, Forest Mills, Long Is.
James W. Howard, R.R. No. 1, Malton, Ont.
Redmond Kinchsular, Port Dover, Ont.
W. Wilson Laidlaw, Wilton Grove, Ont.
Harvey D. Leek, Mount Albert, Ont.
Carroll E. Lindsay, Nanticoke, Ont.
William J. R. Lyons, Cheltenham, Ont.
M. R. Macdonald, Hamilton Beach, Ont.
Orley E. Marshall, 300 S. Norah St., Fort William, Ont.
Cletus, Martin, Vineland Station, Ont.
Douglas F. Moore, R.R. No. 6, Thamesville.
Robert W. Morrison, R.R. No. 4, Alvinston.
H. R. Murray, R.R. No. 1, Ottawa, Ont.
Thomas H. McClelland, 121 Eglinton Ave. E., Toronto, Ont.
John J. McIntosh, 169 Florence St., Ottawa.
William J. McLellan, Staffa, Ont.
F. A. MacMillan, Dutton, Ont.
H. E. Nelems, Victoria, B.C.
J. R. Nelson, R.R. No. 2, Paisley, Ont.
George E. Patton, Cosmopolitan Club, Guelph, Ont.
Luke W. Pearsall, Oro Station, Ont.
Francis E. Phillips, Box 138, Oakville, Ont.
Clifford G. Pilkey, Claremont, Ont.
Wentworth S. Richardson, Woodroffe, Ont.
Thomas C. Rogers, 406 St. Clarens Ave., Toronto, Ont.
F. G. Schell, R.R. No. 8, Woodstock, Ont.
John A. Simpson, Mooretown, Ont.
Fred Smith, Wallaceville, New Zealand.
William C. Speers, R.R. No. 2, Palmerston.
Joseph R. Vignale, 289 Euclid Ave., Toronto.
Frederick J. Webster, Brockville, Ont.
Joseph H. Willmott, R.R. No. 1, Milton.
Parmentier L. Wilson, R.R. No. 1, Delhi.
Anthony W. K. Wise, Kingswood, Boreham Woods, Herts, Eng.
T. J. Wood, Victoria, B.C.
Harry E. Young, Deseronto, Ont.

### Professional Dairy School Certificates Issued During 1922.

Bailey, W. H., R.R. No. 2, Madoc, Ont.
Bain, George, Wiarton, Ont.
Baxter, Frank, Millbank, Ont.
Burrows, J. L., Alliston, Ont.
Coffey, F. S., Creemore, Ont.
Dixon, A. N., 2003 Gerrard St. E., Toronto.
Douglas, W. O., Warsaw, Ont.
Hoffmeyer, P., Frogmore, Ont.
Krotz, W., Palmerston, Ont.
MacNabb, W. R., c/o Bowes Creamery, Toronto, Ont.
Moriarty, G. E., Marshville, Ont.
Nelson, A., Moosomin, Sask.
Ritchard, F., Fiske, Sask.
Roblin, J., c/o Citizens' Dairy, Belleville.
Smith, C., Caledonia, Ont.
Swartzentruber, D., Tavistock, Ont.
Ward, H. M., Seaforth, Ont.

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## MEDALS, SCHOLARSHIPS AND PRIZES AWARDED, APRIL, 1922.

### 1905 Scholarship.

($50 awarded by committee of staff to best "all round" man at close of third year)—F. B. Hutt, Georgetown, Ont.

### Governor-General's Silver Medal.

(General proficiency, first and second year work)—H. N. Frampton, 7 Parchment Street, Winchester, England.

### George Chapman Scholarship.

($20 in books, proficiency in English, first and second year)—O. E. Cameron, 508 MacLaren Street, Ottawa.

### Second Year Essay.

($10 in books)—F. Moran, 1402 Sprague Street, Fort William, Ont.

GENERAL PROFICIENCY, FIRST AND SECOND YEAR WORK.

($10 in books)—H. N. Frampton, 7 Parchment Street, Winchester, England.

FARMER'S ADVOCATE SCHOLARSHIP.

(General proficiency in Animal Husbandry and Field Husbandry, in the first and second years)—H. N. Frampton, 7 Parchment Street, Winchester, England.

SCHOLARSHIPS OF $20 EACH AWARDED FOR PROFICIENCY IN FIRST YEAR WORK.

DEGREE COURSE.

Group 1.—J. Marshall, Summerland, B.C.
Group 2.—A. M. S. Pridham, 226 Cottingham Street, Toronto.
Group 3.—E. A. S. Daymond, Fergus, Ont.
Group 4.—H. Plunkett, Havelock, Ont.

ASSOCIATE COURSE.

Group 1.—F. F. Baird, Chipman, N.B.
Group 2.—W. C. Dyer, Columbus, Ont.
Group 3.—A. E. Cormack, Box 311, Whitby, Ont.
Group 4.—C. P. Rivaz, Palermo, Ont.

Respectfully submitted,

J. B. REYNOLDS,
*President.*

# WORK OF THE DEPARTMENTS

## FIELD HUSBANDRY.

The work in the Department of Field Husbandry may be considered under the following heads: Conducting field experiments at the College; Plant-breeding work with farm crops; Supervising the co-operative experiments with field crops throughout Ontario, and lecturing to the regular and short course classes.

The past season was exceptionally favourable for the conducting of field experiments. In all, approximately one hundred and twenty different experiments with farm crops were included in the plot tests of 1922. The area occupied by these plots was almost eighty acres and about twenty-five hundred individual plots altogether were sown or planted. Experiments were conducted with grains, roots, potatoes, field corn, hay and pasture crops, and miscellaneous crops. It is most important that farmers not only sow the best seed of the different classes of crops, but that they obtain the very best varieties of these crops. The following varieties have proven their value in Ontario: Winter Wheat—O.A.C. No. 104, and Dawson's Golden Chaff; Spring Wheat—Marquis, and Wild Goose; Spring Rye—O.A.C. No. 61; Winter Rye—Petkus, and Rosen; Oats—O.A.C. No. 72, Banner, and O.A.C. No. 3; Barley—O.A.C. No. 21; Emmer—Common; Buckwheat—Rye; Field Peas—Potter, Arthur, and Canadian Beauty; Beans—Pearce's Improved Tree; Soy Beans—O.A.C. No. 211; Vetches—Hairy; Dent Corn—White Cap Yellow, Golden Glow, Bailey, and Wisconsin No. 7; Flint Corn—Longfellow, Salzer's North Dakota, and Gold Nugget; Sweet Corn—Golden Bantam; Sorghum—Early Amber; Sunflowers—Black Giant, and Mammoth Russian; Mangels—O.A.C. No. 2 strain of Yellow Leviathan; Swede Turnips—Good Luck, and Hall's Westbury; Millet—Japanese Panicle; Pasture Rape—Dwarf Essex; Cow Cabbage—Sutton's Earliest Drumhead; Early Potatoes—Irish Cobbler; Late Potatoes—Green Mountain and Dooley; Alfalfa—Grimm, and Ontario Variegated; Sweet Clover—White-blossomed Biennial, and Yellow-blossomed Biennial; Grasses—Tall Oat, Orchard, and Meadow or Tall Fescue. Several new varieties of crops from Europe, United States and Canada were included in the tests this year for the first time. Sixteen varieties of Soy Beans were tested for fodder and grain production in duplicate experiments during the past year. In the average results of the last five years, the most promising varieties of Soy Beans were the O.A.C. No. 211, Ito San, Minnesota No. 167, Early Brown and Early Yellow. A press bulletin was published on the subject of "Soy Beans" in the month of August. Biennial White Sweet Clover cut at five different stages of maturity was ensiled in the past summer and autumn. A comparison of the silage value of corn, sunflowers, sweet clover, a mixture of corn and sunflowers—one-half of each by weight, and a mixture of two-thirds corn and one-third sweet clover by weight, was also made. The results of these silage determinations will be printed as soon as the results are finally determined. Fertilizer experiments were conducted with several crops in co-operation with the Department of Chemistry. About three acres of land was used for this work. The Field Husbandry Department supplied the land and co-operated with the Department of Botany in conducting experiments on an area of about one acre for the treatment of grain for smut.

About three acres of the experimental field was devoted to the work of hybridization and plant selection in 1922. The plant-breeding work at Guelph occupies a greater area than that used for similar work by any other institution in North America. The following varieties of crops were originated through this medium and most of them are widely grown in Ontario at the present time: O.A.C. No. 21 Barley, O.A.C. No. 72 and O.A.C. No. 3 Oats, O.A.C. No. 61 Rye, O.A.C. No. 181 Field Peas, and O.A.C. No. 211 Soy Beans. Many other hybrids and selections are in an intermediate stage of development, but have not yet been sufficiently tested to determine their utility.

The conducting of co-operative experiments in Field Husbandry has increased in extent and value in many of the States of the American Union during the past decade. This institution, which was the pioneer in this class of extension work, has now, including the work of the present year, supplied material for co-operative experiments to almost one hundred thousand farmers. Each experimenter receives several lots of seed for experiment under his own particular conditions and this has meant a total distribution of about three hundred thousand packages of seed. The material has been of the very best as the varieties were carefully selected and hand-picked before being distributed.

For demonstration and judging work with both the long and short courses, a special effort has been made, during the present year and for the past several years, to secure the very best material. In addition to the material grown in the experimental plots for this purpose, large samples of all the prize field crop material exhibited at the Provincial Winter Fair at Guelph have been obtained.

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## ANIMAL HUSBANDRY AND FARM.

### The Farm.

The 1922 crop on the College farm was the best all-round yield produced in many years. A favourable season coupled with extra cultivation caused the fertile fields to bring forth an abundant harvest. The spring crop was well put in and the yields of both straw and grain were above the average for the farm, mixed grain producing 65 bushels per acre. All told there were thirty-five acres of mixed grain, thirty acres of barley and seventy-five acres of oats.

The hay crop was very heavy and was cured in the best of weather, 127 acres yielding nearly 300 loads of fodder of the best quality.

The corn and root crops were well up to average. Forty-seven acres of corn filled the five large silos and twelve acres of mangels with eight acres of turnips more than filled the root cellars. Roots did exceptionally well, yielding approximately 7,650 bushels of mangels and 4,360 bushels of turnips.

The problem of summer pasture was still acute. Twenty acres of annual pasture (oats and clover) and sixteen acres of sweet clover helped out the thirty-five acres of permanent pasture until the aftermath of the hay fields came on. Eight acres of peas and oats were sown for green feed and most of this was used as a soiling crop with pronounced success.

Five acres of sweet clover were cut with the binder and ensiled. The crop averaged four feet high when cut in the late bud stage, June 15th. It produced thirty-five tons 400 pounds of green feed and when settled in the twelve-foot silo produced twelve feet of solid silage. This is being fed out on test against corn. It gave considerable trouble in ensiling, requiring more speed in the blower to properly elevate it. An analysis of stems and leaves of this clover made by the Chemical Department showed the following results:

Analysis of Sweet Clover Stems and Leaves Separately on a Green Basis.

| | Stalks | Leaf |
|---|---|---|
| Moisture | 75.69% | 78.76% |
| Protein | 2.03% | 6.60% |
| Fat | .62% | 1.86% |
| Fibre | 11.89% | 2.14% |
| Ash | 1.04% | 2.03% |
| Carbohydrates | 8.73% | 8.61% |

Ten acres of alfalfa gave two good cuttings, yielding, all told, about twenty-five tons of excellent feed. This was the first year for this crop and it produced a satisfactory late fall growth and has gone into the winter in good condition.

The farm work was well in hand when the winter set in. All the plowing was done and nearly all the plowed land was cultivated several times and some of it ridged. The stiff-tooth cultivator behind the tractor has improved the tilth considerably. The problem on the farm is to handle the large stock on the small acreage. More straw and pasture than the farm will produce are needed.

## Farm Horses.

The only addition to the horse stock during the year was a work team of Clydesdale geldings three and four years old, purchased at $425 for the pair. Five colts, two Percherons and three Clydesdales, were foaled during the year, and four were raised. Investigation on the cost of maintenance of farm work horses during the winter is well under way, and results should be available next year. The horse stock on the farm is not equal in quality to the other stock maintained.

## Beef Cattle.

The beef cattle herds have been maintained in first-class breeding condition throughout the year. The Shorthorn and Aberdeen Angus herds are strong and new heads for each of these herds were purchased during the year. It is generally conceded that Browndale Banner, the Shorthorn herd sire, and Elm Park Elford, the Aberdeen Angus herd sire, are two outstanding bulls of their respective breeds. A new Hereford sire is now required.

The Department was never stronger in beef stock for class-room purposes; a number of very high-class finished steers and breeding heifers were on hand throughout the year.

The steer-feeding experiment to run over two years was put under way, and the five calves by a scrub bull and the five by a pure-bred bull were sent to the Royal Agricultural Winter Fair as a demonstration of the value of breeding in beef production.

During the year considerable investigational work was carried on, including the cost of maintenance of beef cattle, and the cost of maintenance of breeding bulls, as well as the value of breeding in beef production. It was found that the average cost of feeding breeding beef cows in the College herd was 15.9 cents per day. The cost of labour per cow per day was seven cents. The value of the manure per cow per day was 5.8 cents and the cost of bedding per cow per day was 1.9 cents. The average weight of calves dropped was 77.33 pounds, and the average gains of these calves were two pounds per day.

In the cost of maintenance of herd bulls it was found that for the Shorthorn bull, $129.60 per year was required; for the Hereford, $101.76; for the Angus, $107.88; for the Ayrshire, $107.88; and for the Jersey, $86.28.

## Dairy Cattle.

The dairy herd went through the year in good general condition. A new Ayrshire bull and a new Jersey sire were added to the herd during the year and also one Ayrshire heifer. The mature cows in the Holstein herd again made an average of 15,000 lbs. milk each, a few of them going over 18,000 lbs. on twice a day milking.

Some work was done to show the comparative economy of milk production and butter fat production with the different breeds. It was found that the Holsteins produced milk at twenty-three cents less per hundredweight than did the Ayrshires, but in producing a pound of butter fat there was only .03 cent difference. It was found that there was very little difference in the cost of production of the Ayrshires and Holsteins, and that on milk production it cost more with Jerseys, but they produced butter fat a little cheaper than did the other two breeds.

Some work was also done in an attempt to discover a satisfactory method of handling veal calves from dairy cows. The results show that dairy calves for veal should be marketed at the earliest possible age that the market will accept them. This has the double advantage of making use of the whole milk for that period immediately following parturition and of saving milk for sale at an early date. It was also found that to make satisfactory veal whole milk was necessary.

Work was also carried on to ascertain the cost of maintenance of dry cows and heifers in which it was found a monthly cost per animal of $8.60 was the average.

## Sheep.

The sheep flocks at the College came through the winter in good condition and the lamb crop was satisfactory. We still had trouble with ewes at lambing, and this will be difficult to avoid because of lack of facilities to exercise and because of the amount of handling the pregnant ewes get in judging work. Only two flocks are kept for breeding purposes, namely, Shropshires and Leicesters. Besides these, classes for judging work in Cotswolds, Lincolns, Hampshires, Oxfords, Dorsets, Southdowns and fat wethers are maintained.

Investigational work on the cost of maintenance of the farm flock was carried out through the year. It cost us $4.49 each to winter ewe lambs, and $5.50 each to winter breeding ewes.

Investigational work in fattening lambs was continued, and the results showed for last year that it would have paid better to market the lambs in the fall than to finish them in the pens, the lambs all showing a loss when strict account of feed was kept.

## Swine.

The herds of swine have gradually improved from year to year and we feel that we have now choice herds of Yorkshires, Berkshires and Tamworths, and for class room purposes we maintain classes of Durocs, Polands and Chesters. The swine branch of the Departmental work shows a distinct profit each year.

Experimental work undertaken during the year covered the following topics: "The variation in fecundity of swine types and breeds"; "Investigations on the Salt Requirements of Swine"; "The Cost of Winter Maintenance of Brood Sows under Different Conditions of Feeding"; "Investigations on the Cost of Producing and Marketing of Hogs"; and "Comparative Values of Commercial and Home Grown Hog Feeds."

Space does not permit going into detail regarding this investigational work. From a total of 800 litters of each of the breeds of swine, the average size of litters was established as follows: Yorkshire 10.2, Tamworth 9.4, Chester White 9.3, Duroc Jersey 8.4, Berkshire 8.3, Hampshire 8.2, and Poland China 8.

In the salt investigational work the year's experiment showed the optimum requirement to be .5 ounce daily per 125 pounds of pork, and that two ounces or more of salt per day at this weight is positively injurious.

In the wintering of brood sows it was found that where a narrow nutritive ratio produced largely from concentrate feeds was used, the cost was fifteen cents per day for mature sows, whereas with groups using more roughage the cost was reduced to eight and nine cents per day.

An extensive experiment with commercial hog feeds versus homegrown feeds showed that under average farm conditions none of the commercial hog feeds used was as economical as a well-balanced mixture produced on the farm.

### Class Work.

The lecture course for the year was a heavy one and owing to increased classes and change in courses it was found necessary to add a fourth man to the Department. Accordingly, Mr. G. E. Raithby, B.S.A., commenced work the first of October. The lecture work for the year was thoroughly covered and every phase of live stock work was taken up. The entire staff worked early and late in order to give individual attention to the large classes. As usual, a judging team was trained for competition at Chicago and this year took part in the new competition at the Royal Agricultural Winter Fair in Toronto. At the Toronto Show this team was successful in winning first place and for the coming year the handsome bronze trophy donated by the *Farmer's Advocate*, of London, will remain at the O.A.C. In this competition the College had high man with a score of 772, 2nd man with a score of 759, 5th man with a score of 699, 6th man with a score of 681, and 9th man with a score of 670. We also had high man in horses and high man in beef cattle, and were tied for first place in sheep. As a team we were high in all classes of stock judged. The same team was entered at the International at Chicago and, in competition with twenty colleges, stood fifteenth, the highest single placing we received being 15th man with a score of 791. However, the competition was very close and even though low in the list the team was only 290 points behind the winners.

We wish to again record our appreciation of the generous support the breeders of the province have given us in our judging work, and the writer also wishes to record his appreciation of the whole-hearted co-operation of the entire staff of his Department.

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## POULTRY.

This has been an exceptionally busy year. There has been a general increase in all the activities of the Department, which has resulted in there being some branches that were, to a degree, not given the attention they should have received.

The change in the College Courses has doubled the amount of time used in this manner. Prof. Marcellus has taken much of the teaching work.

The Extension Branch has been very busy. The field is almost unlimited and we have not filled more than one-half of the requests. More help should be given, particularly when requested by those interested.

There were one hundred and eighty-eight breeding stations in operation during 1922. These breeding stations had, roughly, fourteen thousand hens which were used to supply eggs for rural schools. The number of pedigreed Barred Rock cockerels used was eight hundred and twelve. Thirteen breeding stations were closed during the year and twenty-nine new ones started. The supplying of the breeding stations with pedigree cockerels is no small undertaking in itself, and if they are to continue to grow we may be forced to make some changes in regard to the rearing and distribution of the males.

Over twenty thousand hens were culled during the season. Of these, about one-third were sent to market as being unprofitable to keep for egg production.

Some experimental work was done in a study of the nutrition of the chick. Many trials were made with groups of sixty chicks. The results, so far, are interesting, but not necessarily conclusive. These results have been published by the papers and a discussion, at this time, is deemed unnecessary.

There is room for considerable work on feeds as they affect the hatching quality of eggs. A small trial has been undertaken. With so much of the Poultry Plant used for the production of males for the breeding stations, the general experimental work is limited.

The general egg production of the thousand pullets trap-nested in 1922 is not as high as in 1921, but the difference is not very great. This is largely accounted for by the fact that there were many changes in the men feeding the poultry, a condition which may be expected unless more attractive wages are paid. Most of the men working on the plant are doing so with the desire to learn fairly good practice.

There has been no year in my experience when the general results from all the activities of the Department were better than in 1922.

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## ENGLISH.

In addition to the regular work of the class-room during the past year, the Department of English had undertaken some important extension work: Two Bulletins have been issued, with the object of giving assistance to rural social organizations in the planning of their year's work and the preparation of programmes for their meetings:

The Special Bulletin entitled "Debates, Plays, and Community Music," by Professor O. J. Stevenson. This bulletin contains suggestions for the holding of debates, including a list of suitable subjects; a list of plays suitable for rural communities, together with instructions as to staging and acting for amateurs; and suggestions for Community Music.

In connection with the subject of Community Music the Department of English has prepared a sheet of Community Songs which are supplied to rural organizations at actual cost.

Bulletin No. 290, entitled "The Rural Literary and Debating Society," by Prof. G. H. Unwin. This bulletin gives directions as to the organization of a Literary and Debating Society; suggestions as to arranging for programmes (including organization of a Mock Parliament, and Mock Trial), and preparing and delivering a speech.

During the year this Department has answered a very large number of enquiries regarding the work of rural social organizations, and has, in co-operation with the Packet Library, sent out a large amount of material in response to requests.

During the year, also, the Department has assisted in other forms of extension work:

At the College in January and February, on one afternoon a week, illustrated lectures on music and pictures were given in Massey Hall. These lectures were largely attended by short course students and by people in the neighbourhood of the College.

During the year, also, under the direction of President Reynolds, who arranged for the prize, the Department of English has conducted a competition to encourage the writing of plays suitable for amateur production in rural communities. Eight plays were entered in this competition. The plays were submitted to the Department of Rural Social Organization in Cornell University, to be judged. The first prize was awarded to Mr. H. C. Mason, B.S.A., of Ottawa, for his play entitled "Smith Broadens Out," and the second prize was awarded to Miss Nellie Medd, Exeter, for her play entitled "Putting Ambition into Beulah Valley."

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## PHYSICS.

### Practical Assistance Offered by the Department.

To those who are interested in the various operations included under the following heads, the Department of Physics is prepared to supply complete information, and, where possible, give assistance upon application being made for the same:

1. Hydraulic rams; installation and operation.
2. Sewage disposal plants.
3. Lightning rod systems.
4. Drainage surveys; tile underdrains and open ditches.
5. Labour-saving devices for the home.
6. Fresh water supply systems for rural districts.
7. Ice houses; construction and ventilation.
8. Silos; cost of construction, capacity, etc.
9. Anti-freeze mixtures; efficiency and costs.
10. Materials for protection of bees in cold weather (efficiency of various materials under different conditions).

### Correspondence.

From time to time the volume of correspondence in connection with the various branches of the work of the Department shows great fluctuations. This year an ever increasing number of farmers are enquiring about lighting systems for farm homes; and their needs as expressed in their various letters are as varied as is the number of applications for assistance. The enquiries re tractors have dropped to a minimum, while the requests for assistance in connection with "fresh water on tap in the homes" have again increased by over fifty per cent. A new branch of the work this year has been the sending out of information relative to strength of materials as used in the construction of farm buildings. Frost proof construction of silos has also received considerable attention.

### Investigations and Extension Work.

In co-operation with the office of the Fire Marshal for Ontario, information relating to spontaneous combustion was broadcasted throughout the Province

of Ontario and we expect that this year's report will show a rapid decrease of fires from spontaneous combustion sources.

Research work has been carried on this year in connection with temperatures in septic tanks and absorption beds and further investigations are being carried on this winter with a view to proving the frost proof nature of the septic tank system as a sewage disposal system.

Practically all of the various types of water systems on the market in Ontario were tested this year with the object in view of determining the accessibility of the parts, the strength and efficiency of the vulnerable portions of the various systems and a complete write-up of the data obtained is on file at the College for the benefit of would-be purchasers of water systems.

The Physics Department has been in constant touch throughout the year with the Agricultural Representatives, the manufacturers of water systems and bathroom equipment, and also with the Department of Mines, in order to determine the following:

1. Why farmers are slow to install fresh water systems in their homes.
2. How a better supply of fresh water can be obtained (hundreds of shallow wells in the Province of Ontario are going permanently dry each year).
3. How the manufacturers can meet the needs of the farmers in producing a cheap and effective plant for giving water supply to all the farm buildings.

The gathering of information is nearly complete, and a campaign is about to be started in which the full force of all organizations concerned will be given the widest opportunity to help in giving to the farmer this long deferred necessity.

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## DRAINAGE.

The work carried on by the Drainage Department this year has been somewhat extended. This has been made possible by the fact that the permanent men on the field staff have been on the job long enough to be familiar with the various phases of the work and are competent to undertake extended assistance to the farmers and municipalities along with the regular work of preparing plans and specifications for actual field operations. This assistance has taken the form of more extensive surveys, inspection of field operations, addressing farmers' clubs, addressing township councils with respect to drainage legislation in the township, and the conducting of special drainage meetings.

### Field Surveys.

The following table shows the extent of the field work completed this year. The greatest demand for assistance comes from the districts where the permanent men are located.

Essex, Kent and Lambton counties have many demands for surveys. This keeps the supervisor so busy that time for exploitation along other lines is hard to find. With the increased demand for inspection work, farmer's club addresses and drainage propaganda work, it will be necessary to relieve the supervisor by giving him assistance from our temporary staff.

The demand for assistance in Southern Ontario has been increasing during the year. Mr. Shorey has been successful in getting several machines located in sections where a number of drainage contracts have been secured. Other districts are being developed and more machines will be placed this coming spring. In this way we hope to assist the farmers with their drainage operations

and at the same time assist the machine operators in somewhat congested sections in Western Ontario to find new territory. In Southern Ontario we have found considerable drainage work to do which is not extensive enough to warrant the use of a machine. For this work Mr. Shorey has been able to co-operate with a contractor, who is engaged in the hand construction of drains, and this has worked very successfully.

| County | No. of Surveys | Acres |
|---|---|---|
| Algoma | 3 | 196 |
| Bruce | 5 | 233 |
| Dundas | 1 | 40 |
| Durham | 1 | 50 |
| Essex | 12 | 845 |
| Grenville | 1 | 25 |
| Halton | 9 | 267 |
| Hastings | 4 | 275 |
| Huron | 11 | 525 |
| Kent | 11 | 880 |
| Lambton | 6 | 530 |
| Lanark | 4 | 239 |
| Leeds | 5 | 116 |
| Lennox and Addington | 1 | 500 |
| Lincoln | 17 | 592½ |
| Middlesex | 6 | 180 |
| Norfolk | 3 | 37 |
| Ontario | 2 | 136 |
| Oxford | 9 | 260 |
| Peel | 1 | 25 |
| Perth | 1 | 200 |
| Simcoe | 1 | 100 |
| Victoria | 7 | 165 |
| Waterloo | 2 | 70 |
| Welland | 2 | 180 |
| Wellington | 8 | 383 |
| Wentworth | 7 | 266 |
| York | 2 | 200 |

## Special Surveys.

Several requests for special surveys have been made during the year. A number of the farmers living in Wainfleet township, Welland county, became very much interested in the lowering of the water level in the old Welland canal feeder, which would form an outlet for some forty thousand acres of unimproved land, much of it very swampy and only utilized some seasons for rough hay. Early in March, Mr. Shorey made a complete survey of the feeder, north and south back ditches and all open ditches leading toward the back ditches. Plans and profiles of the whole scheme were prepared for a deputation which went to Ottawa to wait on the proper authorities, and a representative accompanied the deputation, which was well received and their request was promised consideration. In June, Mr. Jost, an engineer for the Department of Railways and Canals at Ottawa, came to Welland and in company with those interested in the scheme and a representative of the Drainage Department, O.A.C., made a thorough inspection of the scheme. Mr. Jost was quite impressed with the justification of the request and thought that something could be done to relieve the suffering from flooded conditions. Up to the present time nothing has been done but the settlement of several factors pertaining to the construction of the new Welland canal and the water level in the Welland river. We hope that conditions will permit the improving of this large area of fertile agricultural soil.

A number of the farmers' clubs, particularly those in the districts where the permanent men are located, made requests for speakers on drainage. This has aroused much interest.

### Assistance to Municipalities.

As drainage activities are extended, more municipalities become interested in securing financial assistance for their ratepayers. Consequently, it is necessary for them to consider passing a by-law under the "Tile Drainage Act." Three municipalities had this under discussion this year, when we were privileged to attend. These were at Orillia, Sheppardton and Beechville. The Oxford North township council at Beechville passed a by-law to borrow $25,000. The others laid the business over for further discussion.

### Inspection.

Many requests from farmers have been made for assistance in checking up the work of installation. These generally follow the survey. In several instances, however, these requests have come from farmers who have had no survey, and almost invariably there has been faulty construction, either in the system being used or the method of installation. Other cases of suspicious installation have been called to our attention and some very poor machine work has been observed. In one instance the operator had moved out of the district before our man arrived.

We are convinced that this is a very important phase of the drainage work, which is urgently in need of further development. When farmers go to the expense of tiling their land, it is important that they get good tile as well as good work on the installation, and assistance in this respect is invaluable. Frequently the quality of the tile is poor and the farmer needs some protection in this respect.

### Machine Operators' Certificates.

A number of inspections, relative to operators' certificates, have been made during the summer and fall. We have experienced considerable difficulty in this work in being able to make the inspection at an opportune time. When word is sent to the operator that we would like him to meet our man on a certain day, every effort is put forth to have especially good work ready for inspection, afterwards perhaps he is not so careful. Facilities for an inspection at any time unknown to the operator would be much more effective and more than one inspection should be made before the certificate is granted.

Following last year's short courses, some fifteen men wrote the examinations for Drainage certificates, which makes up-to-date thirty-six men who have written the examinations. A number of these have received their certificates, others have qualified this fall and their certificates are being prepared. We hope to further promote this branch of developing proficient operators.

### Short Courses.

During January and February three two-week Short Courses were conducted, one at each of the following places—Guelph, Essex and London. In holding them in these various centres, an endeavour was made to facilitate the attendance of the operators who could not get away from home for two weeks. The classes were not largely attended, but great interest and appreciation was shown by the men who availed themselves of this opportunity. Some fifteen certificates will be issued as a result of last winter's Short Courses.

### Ditching Machines.

None of the machines were used for demonstration work this year. Two of them were used on commercial work and the third was not moved. Circumstances made it impossible to complete our plans in Northern Ontario. Tile

being almost prohibitive in that part of the province because of the excessive freight rates, we decided to manufacture cement tile.

### Field Demonstrations.

We have endeavoured to assist machine owners moving into new territory, or men purchasing new machines by putting on field demonstrations, showing the machine at work and discussing drainage operations with those who attend. A very successful meeting of this kind was held near Bowmanville in Durham county this summer, under the direction of F. C. Paterson, District Representative. Some thirty-five men were present to observe the machine working, the laying of tile, blinding and backfilling. Several addresses were given on Drainage and Machine Operation and a very helpful and interesting discussion followed. We hope to have opportunities to further develop this kind of assistance.

### Demonstration Plots.

No new demonstration plots were established this year. Below we submit reports of two out of the three plots we put in in 1921. The third plot was seeded and the owner was unable to furnish a detailed report.

| Owner | Crop | Yield in Bushels per acre | | Increase per acre | Value of increase per acre |
|---|---|---|---|---|---|
| | | Drained | Undrained | | |
| A Steen, Pakenham | Oats | 60 | 19⅛ | 40⅞ | 18.36 |
| J. B. Leach, Verner | Oats | 71¼ | 52½ | 18¾ | 8.44 |

The increase per acre was reckoned on the price of oats the first of December, 1922,—forty-five cents per bushel.

In a year that was quite favourable for undrained lands, the report shows decided financial returns. This is accounted for by the earlier spring seeding, better stooling of the grain and better physical condition of the soil by reason of the installation of the drains.

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## HORTICULTURE.

Since the 1st of April, 1922, the policy of the Department of Horticulture has been changed considerably, crops being grown wherever possible in the vegetable garden and in any vacant land to take care of the needs of the dining hall. This was especially so during the Summer Course in July and throughout the fall, enough potatoes being grown to carry them through until the 1st of November. We have also large quantities of roots and other vegetables on hand for the winter.

On the campus a good many changes have been brought about this year. The formal beds in front of the main residence were removed and the space filled in. Two or three groups of Norway spruce on the campus, which were dying and interfered with the Rugby field, were removed. Several masses of shrubbery, which had overgrown and were dying, were removed. The result has been the opening up of the campus so that the students have more playground. Most of the buildings can now be seen from the main entrance of the main building, and vistas have been formed which give a more complete view

of the College as a whole. A new main road was put down which runs along the front of Mills Hall—the old one has not yet been removed but will be shortly. A short road on one side of Massey Hall, which was never used, has been closed and grassed over. The road at the foot of the campus, which also was never used, has been closed and partially filled in and grassed. During the summer time temporary beds were placed in front of the main building, but were removed this fall and a new border extending the full length of the main building and eight feet wide was made. This has been planted with many new types of conifers, shrubbery, perennials and bulbs, and will be further improved in the future. A peony garden was made between the Horticultural and Biology buildings, in which are over 200 varieties, many of them the best and newest; two plants of each variety were planted and are labelled. The beds are laid out in such a manner that people desiring to study the varieties can do so at their own pleasure and comfort. An iris bed of 150 new varieties was placed at the lower end of the campus, across the road from the new Dairy building. Besides iris, this bed will be planted with phlox and lilium, so that there will be a continuous display of bloom during the season. Both of these new features have met with the unqualified approval of the horticulturists in the province. A new perennial border this fall was placed along the north-western border of the Macdonald campus. This is something that has been in mind for some time, but we did not have the time to accomplish it before. Owing to the removal of the old border from in front of the Field Husbandry building, which had become overgrown, this new border was necessary. Many trees and shrubs have been planted on the College and Macdonald campus; the idea back of this is finally to have the campus an arboretum and botanical garden. The situation and grounds are here for such a thing, and it will be of use also to the Botanical Department of the University of Toronto, who have approved of the idea. The grounds surrounding the Apiculture building were put in shape, terraces being made and trees planted. The old perennial stock, which had outgrown itself in the garden, was removed to the orchard, where it was split up and replanted.

In connection with the new Dairy and Veterinary buildings a great deal of work has been done this fall in making driveways into the buildings and levelling the ground. Some 3,000 loads of gravel have been removed from the field back of the Dairy building in order to bring the grounds around these buildings up to the present level. But much more work will be necessary.

The greenhouse work this year has been changed so that we can demonstrate to the students as much as possible the commercial side; at the same time not forgetting the æsthetic side.

The common commercial plants, such as carnations, roses and chrysanthemums, have been grown commercially in a large enough quantity for the students to acquire a knowledge of real commercial practice in growing them. This same applied to pot plants, such as ferns, cyclamen and bulbs. The plants not necessary for student work have been sold when they reached their best; the demand so far has been largely around the College, but we are also getting a considerable demand from outside from people who are in the florist retail trade. For student purposes, also, we have been getting specimen plants of various commercial groups which are not grown to as large an extent, such as orchids and liliums.

We have been requested of late by prominent men in the florist business to aid them in obtaining young men who are graduates of this College, with a fair knowledge of plant work, whom they can take into the business and develop as leaders.

This fall a new currant plantation was started of the best commercial varieties. The old plantation was removed two or three years ago and not re-planted. We hope next year to plant a raspberry plantation and small vineyard. The latter will be used largely for instructional purposes, so that the men going out from here as fruit experts will have a thorough training in the best methods of handling such crops.

To effect these various requirements a change has been made in the labour system. A single foreman, formerly in charge of all the work in the Department, has been supplemented by a florist, an orchardist, a vegetable gardener, and the former foreman in charge only of the lawn.

Without the need of more appropriations we find that this method is working out satisfactorily, as each of the new men employed is a man thoroughly acquainted with the practical work of his section and is quite competent to carry on even though the man on the staff in charge of this section may be away for a considerable time. This method will also allow our staff men to get away to do extension work; something that is more necessary now than formerly in the Province and should rightly be done from the College.

Plant breeding has been continued with asparagus, beans, beets, celery, lettuce (both indoor forcing and outside heading types), onions and rhubarb; in fruits, we have seedlings of apples, plums and pears; in flowers, roses, various lilium hybrids, iris and gladioli. New work was started this year in cabbage, cucumbers and gladioli.

VEGETABLES: To deal with vegetables specifically:

*Asparagus:* In asparagus we have continued this year individual cutting tests on some 1,400 plants of the Mary Washington strain. With us, while entirely disease resistant, it has objectionable features. The plants in our tests have shown the widest possible variation as to type and cropping ability. So much is this true that the strain as a whole, until further improved by selection, cannot be largely recommended for commercial planting. For example, our poorest plants in the last two years have cut as low as four good cuttings; for the same two years our best plants have given as high as seventy; also some start very early while others not until three weeks later. We have isolated the best of these for future improvement.

*Beans:* Strain 7521 during the past season has produced a very heavy crop of wax beans on bush plants. The quality is of the best; the pods being five to six inches long, round, golden yellow in colour, and stringless. In this strain no disease appeared in the severe test year of 1922, and we will distribute seed for final commercial test next spring.

In field beans we have both White Field Pea and Marrow Fat types. Five very superior strains of pure white beans are breeding true. The plants are bush type in growth and disease resistant; of these strains one is of the pea bean type, three are Marrow Fat and the other kidney shape. They are all heavy croppers and will be sent to the different Experiment Stations throughout Canada for final test.

*Beets:* As yet no definite results have been noticed. The object is to get early, well-coloured Egyptian beets, Detroit Dark Red with high colour and uniformity for main crop.

*Cabbage:* Work is progressing in crossing Tender Eight Weeks Cabbage, which has been imported from Denmark, with various others, such as Early Jersey Wakefield, to get the exceeding earliness of the Tender Eight Weeks type in a larger cabbage.

*Cucumber* breeding has been started in forcing types, to improve the so-called Hescrow strain of cucumber as to colour. Its light green colour has made it unsaleable.

*Celery:* The past year has been lost because celery blight was so prevalent. New crosses will be made with the Australian Soup Celery in an attempt to obtain a disease resistant strain.

*Lettuce:* We have developed a forcing strain of Grand Rapids lettuce which last year tested out very much superior to the original strains of this lettuce. At the end of nine weeks plants of our strain weighed 4.2 ounces, the best commercial strain weighing 2.5 ounces. This compares favourably with the Ohio Dark Green Grand Rapids strain, which weighed 4.5 ounces, but is not so readily marketable because of its dark green colour. In outdoor lettuce breeding we started two years ago with seventy-three strains of head lettuce and have discarded them all except Iceberg; our own strain has done well with us and among various growers who have tried it. It heads well in hot weather; a most necessary quality in lettuce grown as a second crop in Ontario.

*Onions:* Strains of Denia, Valencia, Yellow Danvers, Southport Yellow Globe and Ohio Yellow Globe have been carried to the fourth and fifth generations, and have developed very uniformly. The demand for our seed has become so great that we hope to be able to get seed raised in commercial quantities.

*Rhubarb:* Two fine strains of forcing rhubarb are being propagated as quickly as possible and will be distributed. The parent of these is Sutton's Seedless, open fertilized. Strains of out-door rhubarb of fine quality, red colour and vigorous habit are also being developed in quantity.

FRUITS: No new work was attempted the past season. In apples there are now two trees of McIntosh, open fertilized, which promise well commercially. One tree in particular has borne consecutive crops for five years and produces an apple of the McIntosh type, but with thinner skin and two weeks earlier. This apple keeps as well as McIntosh, and should be a splendid commercial proposition. There are three Duchess-Spy crosses and six Duchess-Tolman crosses which are in bearing and promise to be valuable commercially. There are also four trees of Spy crossed with Whitney which are producing good apples and crop very heavily. Due to the parentage these should be hardy for northern growth. All these apples are of sufficiently high quality to warrant being propagated in fairly large quantities, and this is being done. In addition to seedlings which have fruited at the present time we planted out this spring some 800 apple trees of the best possible crosses of known parents. These ought to start fruiting within the next two or three years. On account of the parents used these should produce some good new varieties for Ontario use.

In *Plums* there are seedlings of Glass, one of which produces yellow, large-sized, highly-coloured, free-stoned plums, which has cropped heavily with us and should be excellent for commercial purposes. We have four blue plums derived from Glass which are decided improvements on the parent, both as to quality and to season, coming much earlier than the parent. These all should be valuable, especially in the northern sections.

*Pears:* We have no fruited seedlings of pears, but have about 100 seedlings which ought to fruit within the next year or two, specially crossed for disease resistance. These pears are crosses of special varieties, such as Seckel, Kiefer and Tonkavietka, with the best commercial varieties.

*Strawberries:* In our strawberry breeding several strains of valuable strawberries for heavier soil have been obtained. A cross of Utility and Parsons (3428) tested during the past four seasons has produced a good crop of highly

flavoured strawberries and as a domestic variety would be unexcelled. A cross of Parsons and Howard No. 17 (4258) has also done very well with us. This is a firm, large, conical strawberry of high colour and of acid content which makes it an excellent commercial strawberry. Reports from localities to which it has been distributed bear out the information we have on it in our own plot. A cross of Buster and Williams (4465) promises well as an improvement on the variety of Williams. It fruits at the same length of season, but seems to hold its size better and has not the fault of Williams—the green tip. Marshall and Howard (6956) also has tested exceedingly well with us as a commercial sort for mid-season crop planting. This variety produces a good flavoured, firm, acid berry of good colour and of heavy yielding ability. We have one sort whose parentage has been lost which also promises well as it is a heavy yielder. The quality is good for shipping and the colour of the berry is deep red with red flesh.

Flowers: Our work up to the present time with flowers has been very limited on account of the time available. However, some work has been done in this form of breeding and at the present time we have twelve rose bushes of a cross of General Jacquemont with Frau Karl Droushki which will be blooming next year for the first time. A cross of lilium sargenti and lilium regali has given us a large, free flowering white lily type. This plant has caused a great deal of favourable comment. We have several thousand seedlings of this of the second generation and expect to obtain a good forcing strain of lilium.

In *Iris* there are some fine blue types as well as one pure white which are of value.

In *Gladioli* we have several thousand bulblets as the result of different crosses made in 1921, and these will be tested for flower type within the next two years.

Potatoes: Certified seed potatoes were procured from various sources in Canada and the United States. Some twenty lots were received of the varieties Irish Cobbler, Dooley, Green Mountain, and Late Petoskey or Russet Rural. These were tested in our trial plots for the presence of disease.

Among the Irish Cobbler crop of Mr. R. D. Nodwell, of Hillsburg, were certain plants of upstanding and vigorous growth with purple blooms, but which were undoubtedly Irish Cobbler by the type of tuber. Some fifty of these plants were marked and seed saved which we now have; of these plants none were affected by disease. These will be tested in 1923 at Guelph.

Experiments were conducted at this place to compare Bordeaux dust with the Bordeaux liquid as a control for late blight. It was found that no late blight appeared in the dust-treated patch but, unfortunately, there was no check plot, and the remaining section was Bordeaux treated, so no late blight showed up in the entire patch. The dusted portion died first; the dust apparently not being quite as efficient. However, the ease of application makes it still very desirable.

Three hundred shade trees were sent to the Kemptville Agricultural School without charge, on request of Mr. Lionel Stevenson.

On account of the pressure of work we were unable to fill all the requests for addresses and advice in regard to the laying out of grounds; as much as possible of the rural work was done. Some sixty-three complete plans were made of school gardens, rural parks and grounds surrounding community halls. Besides this many rough sketches were made on the grounds and left with the people in charge. This work could very easily be developed and would certainly fill a much needed want.

## DAIRY HUSBANDRY.

The chief item in the year's work is the near completion of a new dairy building and equipping of the same with machinery. This will increase our facilities for giving practical and theoretical instruction in dairying to College students; and will also enable us to give better service generally to the dairy industry of the Province of Ontario. Although the new building was not completed at the opening of the College term on September 29th, we vacated the buildings formerly used for dairy instruction in September, and began our work in the new plant. We were much handicapped because of unfinished contracts, and through lack of arrival of much of the new machinery, which had been ordered for delivery not later than September 1st. When all is finished, we shall have one of the most up-to-date dairy buildings on the continent. In addition to facilities for giving instruction in cheese and butter manufacture, which, up to the present have been the main branches of dairying in Ontario and will continue so for some time to come, we are providing for teaching, and for investigating problems in connection with the marketing of milk and the manufacture of ice cream, condensed and powder milks. The new machinery will cost about $45,000, and would have been considerably more had not manufacturers in nearly all cases given us liberal discounts from their regular prices. It is estimated that the dairy building, machinery, laboratory and office equipment will represent an investment of about $250,000.

The investigational work for the year has been less than usual, owing to the fact that much time was spent in the latter part of the season, moving old apparatus to the new building and installing new machinery.

The following is a brief outline of some of the main lines of investigation undertaken. We are indebted to Messrs. Scott and Clark, of the Government Grading Station, Toronto, for assistance in scoring the various lots of butter, and to Mr. Frank Herns, London, for scoring the experimental cheese.

### Cheddar Cheese Investigations.

*Relation of Fat in Milk to Yield and Quality of Cheese.* Owing to the enforcement of the Ontario Dairy Standards Act during the past year, it was thought advisable to get some new data on the relation of the fat in milk to yield and quality of cheese. The milk as delivered to the cheese branch of the dairy department was divided into "low" and "high" testing vats. The average of the vats with low fat content was 3.2 per cent.; and of the high lots, 3.7 per cent. fat. The average weights of milk in the vats was 1,560 pounds for the low, and 1,335 pounds for the high lots. There was very little difference in milk and whey acidity, or losses of fat in the whey in the two lots. The chief differences were in yield of cheese: 88.7 pounds per 1,000 pounds milk for the "low" lots, and 99.95 pounds per 1,000 pounds for the high-testing lots. Stated another way, the pounds of milk required to make a pound of cheese was 11.27 for the vats averaging 3.2 per cent. fat, and a trifle over ten pounds for the vats averaging 3.7 per cent. fat. The moisture contents in the ripe cheese lots (one month old) were respectively 35.62 and 35.93 from the low and high-testing vats.

The average scores of the cheese were:

| Av. % fat in milk from which cheese were made | Flavour max. 45 | Closeness max. 15 | Colour max. 10 | Texture max. 25 | Finish max. 5 | Total max. 100 |
|---|---|---|---|---|---|---|
| 3.2 | 40.33 | 13.66 | 9.75 | 23.16 | 5 | 91.90 |
| 3.7 | 40.83 | 13.00 | 9.75 | 23.00 | 5 | 91.58 |

### Conclusions.

1. The increased yield of cheese from 1,000 pounds milk testing 3.7 per cent. fat was 1.25 pounds, as compared with the yield from a similar weight of milk testing 3.2 per cent. fat. This emphasizes the unfairness of paying for milk at a cheese factory on the basis of weight of milk alone.

2. In these tests the average score for "flavour" was higher by half a point, for the higher testing milk cheese, but the total score was nearly half a point less for these lots, which indicates that good Cheddar Cheese can be made from milk testing as low as 3.2 per cent. fat.

### Effect of Sweet Clover Fed to Cows Producing Milk for Cheddar Cheese Making.

For some time there has been general complaint against the use of milk for city milk trade, and for the manufacture of butter and cheese where cows are fed on sweet clover. Two series of tests were made with reference to this problem in cheese making—one, using the milk from the College dairy herd before and after going out to pasture on sweet clover; and one, using the milk delivered by our regular patrons, some of whom fed sweet clover, and some who did not.

In the first series a portion of the College herd milk was made into cheese on May 25th and 31st, while the cows were still in the stable at night, but were allowed to eat natural grass pasture in a lot during the day. On June 7th and 12th, after the cows had been pasturing on sweet clover for about a week, the milk from the same cows was again made into cheese. This method of testing is not altogether satisfactory, as of necessity considerable time elapsed between the two tests and other factors may have entered into the question. In fact, it seems probable that on May 31st something of this kind happened, because the score of the cheese for flavour dropped to thirty-six points as compared with a score of 39.5 points at the previous test, and a score of thirty-nine points for flavour on the next two tests when the cows were pasturing on sweet clover. Because of this low score of one lot where cows were not fed on sweet clover, the average scores of the cheese were higher for the dairy herd tests feeding on clover. This is rather misleading and should be considered along with the tests in the second series.

Seven tests were made in this series, in which the milk from cows owned by dairy patrons who fed sweet clover was compared with that from those farms where no sweet clover was given to the cows. Altogether there were made into cheese, 4,487 pounds of no clover milk, testing an average of 3.24 per cent., and 5,236 pounds, testing 3.15 per cent. fat, where sweet clover was fed. These tests were made during the months of June and July. There was practically no difference in the average acidities of the two lots of milk at the time of adding the rennet—.19 per cent. acid for the no clover lots, and .198 for the clover vats. At the time of "dipping" or removal of the whey, the respective acidities were .168 and .17 per cent. for no clover, and the clover vats. In other points there was not much difference except in yield and score of cheese. The no clover lots produced an average of 94.24 pounds cheese per 1,000 pounds milk; the clover lots an average of 89.19 pounds, a difference of 5.05 pounds in favour of the no clover lots, which is difficult to account for. The average score of the cheese was in favour of the no clover lots by .81 point in flavour, and 1.19 points in total score. The tests will be repeated next year.

### Effect of Having Curds Laid on the Flat and on Edge, After Matting.

Some cheese makers claim that the Closeness, Body and Texture of Cheddar Cheese are very much improved by placing the curds, after matting and up to near the time of milling, on the edge instead of turning the curd flat as is the usual plan in Western Ontario cheese factories. Fourteen tests were made by dividing the curd from a vat of milk into two nearly equal parts, one of which was worked on the flat method and the other on the edge plan. For these tests there were used 27,140 pounds milk testing an average of 3.2 per cent. fat. The moisture content of the cheese and the shrinkage during one month was much the same for both lots. The striking difference was in the flavour of the cheese, which averaged two points higher for the lots worked on the "edge" plan. The differences in other qualities were very slight. The scores indicate that so far as improving the body and texture goes, there was little or no advantage by having the curds set on edge during the matting stage.

### Effect of Increasing the Quantity of Rennet in Cheese Manufacture.

During war-time, rennet was very expensive, costing as high as $8 to $10 per gallon as compared with $3 per gallon previous to 1914. At times it was impossible to get sufficient rennet for factory use, and cheese makers were obliged to use a substitute, chiefly pepsin. Our investigations showed that pepsin does not produce quite so nice a quality of cheese as does rennet, or a mixture of rennet and pepsin. The result of scarcity and high prices for rennet was that many cheese makers did not use a sufficient quantity for the best results in making cheese. It has been demonstrated that if less than three ounces of standard rennet per thousand pounds of milk be used, there is too much loss of cheese-making material in the whey, and the cheese do not ripen properly, as it is generally conceded that rennet is the chief agent in the ripening, or what is commonly called the "curing" of the cheese.

Rennet is now more plentiful and more reasonable in cost, hence cheese makers are advised to use more of it. In order to determine the effect of using larger quantities of rennet than the normal amount, three ounces per thousand pounds of milk, a series of tests were made during the past season by using four, five, six, seven and eight ounces of rennet per thousand pounds milk as compared with the standard quantity of three ounces. The tests were divided into five series, in each of which an excess of from one to five ounces was tested against three ounces of rennet per thousand pounds milk.

#### Conclusion.

The extra quantity of rennet produced slightly more cheese, but not enough to pay the cost of rennet. The quality of the cheese was slightly better in texture and closeness by using the normal amount of standard rennet. Therefore, it would seem as a result of these tests that there is no need of using more than three ounces of good rennet per thousand pounds milk in the manufacture of Canadian Cheddar Cheese.

### Relation of the Acidity of the Milk Separated to the Acidity in the Cream.

Fourteen lots of raw milk were separated. In each case the milk and cream was tested for fat as well as for acidity.

| Average % fat in milk | Average % acidity of milk | Average % fat in cream | Average % acidity of cream |
|---|---|---|---|
| 3.52 | .175 | 36.71 | .139 |

Fourteen lots of pasteurized milk were separated and tested with the following results:

| Average % fat in milk | Average % acidity of milk | Average % fat in cream | Average % acidity of cream |
|---|---|---|---|
| 3.33 | .169 | 36.89 | .126 |

In these experiments four lots of pasteurized cream tested .11 per cent. acidity which was the lowest acidity test obtained.

The average of all the tests showed a lower percentage of acid in the cream than there was in the milk. This probably is due to the fact that casein found largely in the skim milk after separating plays the part of an acid, when milk and cream are tested with an acidimeter.

### Development of Acidity on Milk and Cream.

A few experiments were made in holding milk and cream.

It was found that samples held at 45° F. for two or three days developed very little acid, while sample held at 60° F. or higher developed acid more rapidly.

Low temperature is required for long keeping of milk and cream.

### The Pasteurization of Buttermilk at Creameries where the Cream is not Pasteurized.

Twelve experiments were made with buttermilk from raw cream in the endeavour to find out if such could be pasteurized satisfactorily.

In the majority of cases buttermilk was heated at 170° F. for ten minutes, as required by the Dairy Standards Act.

It was found that satisfactory results could be obtained when the buttermilk was well agitated during the heating process.

The pasteurized buttermilk looked like milk as the curd particles were very fine.

Although this buttermilk would separate on standing it would mix readily when agitated.

When the buttermilk was given little agitation while heating, the curd particles were large and separated readily.

To a few lots of buttermilk a "neutralizer" was used before pasteurizing.

It was found that by neutralizing the buttermilk before pasteurizing the separation of the curd would be prevented. This practice is not to be recommended, however, as the buttermilk becomes very bad if held for forty-eight hours. In the factory, there is also the danger of adding too much alkali to the buttermilk.

### The Effect of Sweet Clover on the Flavour of Butter.

One churning of cream was made while the cows belonging to the College herd were on stable feed. This was followed by five churnings while they were pasturing on sweet clover in the month of June.

The churnings were made in a hand churn. Samples of the butter were held until the end of August. The butter was scored each month during the time of holding.

There was no indication of clover flavour on any of the samples. The butter kept as well as experimental butters in former years.

### Whey Butter.
(Tests made in 1921 repeated in 1922.)

In order to compare butter made from whey cream with that made from milk-separated cream, the milk for cheese making was mixed in a large vat and a portion dipped out and run through a cream separator.

The remainder of the milk was made into Cheddar Cheese and the whey put through a whey separator.

In each case the cream was held until sufficient was collected to make a small churning.

| | Milk-separated cream | Whey cream |
|---|---|---|
| Average churning temperature | 55.8° | 50.3° |
| Average minutes churning | 21 | 26 |
| Average % moisture in butter | 12.6 | 12.8 |
| Average score of butter, 1st | 90.25 | 90.88 |
| Average flavour score, 1st | 37.33 | 37.58 |

### Tests for Whipping Cream.

In June, twenty-five experiments were made whipping cream.

| | Average | Highest | Lowest |
|---|---|---|---|
| Per cent. fat in cream | 27.5 | 41 | 22 |
| Acidity of cream | .15 | .20 | .12 |
| Age of cream | 22 hrs. | 5 days | ¾ hour |
| Temperature of cream | 47° F. | 55° F. | 42° F. |
| Temperature after whipping | 53° F. | 60° F. | 48° F. |
| Swell or increase | 46% | 125% | 0% |
| Length of time whipping | 2.8 mins. | 7 mins. | ½ min. |
| Temperature of room | 65° F. | 83° F. | 43° F. 1 sample whipped in cold-storage. |

### Whipping Cream Notes.

All of the cream used in these tests was pasteurized in a flash pasteurizer.

In each experiment, eight ounces of cream were whipped in a bowl with a dover beater.

The temperature, richness and age of the cream are important factors.

Cream rich in fat whips in less time and stands up better than does a thinner cream.

Cream containing 28 per cent. fat is a satisfactory whipping cream.

Cream for whipping should be cooled to 45° F. if possible, and be held for at least twenty-four hours.

If cream is not held at a low temperature there is danger of having too high acidity.

Lemon juice is a suitable substance to add to cream when it is too fresh. This will cause it to whip better, and will give a larger yield.

Cream whipped at a low temperature whips in less time and gives a larger yield than that whipped at a higher temperature.

After whipping, the cream should be held at a low temperature until used.

If cream cannot be whipped in a cool room, the dish containing the cream should be placed in very cold water.

In a warm room the temperature increases rapidly; for example:

June 7th—room temperature, 83°; cream before whipping, 44°; length of time whipped, four minutes; temperature after whipping, 56°.

"Textor" added to cream for whipping did not increase the yield, but it made the cream thicker.

There is no advantage in adding milk powder to cream for whipping. Better results were obtained without it.

### Milk Powders for Culture (Starter) Making (Farm Dairy)

Two tests were made.

The culture milk was made as follows:

Can No. 1—Skim milk, 10 pounds.

Can No. 2—"Milk Stock," 1 pound. Water, 9 pounds.

Can No. 3—"Drimilk," 1 pound. Water, 9 pounds.

The powders were mixed as directed by placing the powder on the water and mixing thoroughly. A dover beater was used for the beating or mixing.

The three cans of culture milk were pasteurized, then cooled to 72°. Two ounces of mother culture were added to each lot of ten pounds.

The next day, all of the cultures were in good condition.

This experiment was repeated with good results. All of the cultures were nice and smooth when stirred and the flavour was good.

## Butter Making Experiments.

The investigational work in butter manufacture carried on at the Dairy Department during the summer of 1922, was chiefly along the following lines:

1. (*a*) Effect of different quantities of cream in the churn upon loss of fat in the buttermilk.

(*b*) Effect of holding cream for different lengths of time upon loss of fat in the buttermilk.

2. (*a*) Comparison of skim milk powder starters with ordinary skim milk starters as to their effect upon flavour and keeping quality of butter.

(*b*) Comparison of associated organisms starter, with ordinary lactic acid starter as to flavour and keeping quality of butter.

(*c*) Effect of adding starter together with ripening or not ripening upon flavour and keeping quality of butter.

(*d*) Comparisons were made of the Babcock test for buttermilk with the acid-alcohol test in connection with all the experiments.

### General Observations on the Experiments.

All the factors which affect in any measure the exhaustiveness of churnings under commercial conditions were standardized so far as possible, except the one factor under investigation. Sufficient cream for an experiment was placed in a

pasteurizer and, after thorough mixing and neutralizing part of the acidity, was divided into two lots in the proper proportion for churning.

The pasteurization temperatures as well as every detail in the churning process were kept the same so far as possible.

*Conclusions.*

1. The best results may be obtained in physical quality of butter and also in exhaustiveness of churnings where the churn is filled not less than half full and not more than two-thirds full.

2. Where water and ice are used for cooling cream after pasteurization, the cream should be held from ten to twenty hours before churning, especially during the summer season when the soft fats are in abundance. The lowest loss of fat in the buttermilk was obtained from cream which was held over night.

## Effect of Using "Starters" on Quality of Butter.

*General Notes:* The cream used was of the ordinary run, but generally of fair quality. Eight hundred pounds of cream were used in each experiment. This quantity, after partially reducing the acidity, was divided into two 400-pound lots (approximately) and both lots were pasteurized at 170° F. for ten minutes. A representative lot of each churning was shipped to the Provincial Grading Station and was there scored when fresh. After a period of six months, it was re-scored to determine the relative keeping quality.

The butter made from cream to which "Drimilk" starter was added had a slightly higher score for flavour as well as total score when fresh than that to which "Klim" starter was added, but deteriorated to a greater extent in storage. Where "Klim" starter was used the butter retained as high a score at the end of the storage period as it had when fresh.

The per cent. acidity of the cream at churning is a factor in keeping quality, and it would therefore be unjust to attribute the difference in keeping quality of these butters to the quality of the starter used, as both starters appeared to be of good quality and in good physical condition.

*Conclusions.*

1. Powdered skim milk ("Klim" or "Drimilk") used for starter making will give satisfactory results in the manufacture of butter.

2. Comparative churnings of cream to which starter made from "Klim" and "Drimilk" (commercial skim milk powders) were added, resulted in butter which scored equally as high as that to which ordinary skim milk starter was added.

3. Re-making of powdered skim milk for starters.

If starters are used in the cream gathering creamery, where skim milk and whole milk are not available, it is practicable and convenient to purchase a commercial form of skim milk powder for this purpose.

There are two important qualities which we must look for in skim milk powder apart from its good flavour, namely—miscibility and solubility; that is, it must readily mix with water, without forming lumps, and be soluble to as high a per cent. as possible.

The powder and water are weighed out respectively in the proportion of one to nine. The temperature of the water is preferably 90° F. to 100° F. although a lower temperature is often used with very good results. An ordinary mixing tank having a mechanical agitator near the bottom is to be recommended for

commercial purposes. The water is first poured into the tank and the powder is added in the proper proportion. Providing the speed of the agitator is sufficient, ten to fifteen minutes running is long enough to thoroughly mix the powder and water. The re-made skim milk is then taken and treated in the usual way for the making and propagating of commercial starters.

*Conclusions.*

1. The associated organism starter gave better results than the ordinary lactic starter in the one series of experiments. As there are a number of factors which might influence the quality of the butter, further investigational work will be required before any positive assertion can be made as to which starter will give the better results.

2. An improved quality of butter may be made for immediate consumption from high acid cream by reducing the acidity and adding a good starter, and allowing the cream to ripen to a low acidity.

3. Low churning acidity of cream is more favourable to keeping quality of butter than high churning acidity.

4. The Babcock test for fat in buttermilk is not a reliable one and cannot be depended on for ascertaining the losses in creameries, as the results are much too low.

5. The acid alcohol test is a simple, accurate method of determining the fat loss in buttermilk and should be used in place of the Babcock test.

6. 8.8 cubic centimeters of buttermilk should be used in making a fat determination by the acid-alcohol method, rather than nine cubic centimeters, as this comes nearer to the nine grams required for a test by this method.

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## BOTANY.

The advent of the Veterinary College to Guelph has increased the work of this department. The number of students in the elementary classes in Botany has been increased, and it has been found necessary to devise two special courses dealing with poisonous plants and plant poisons found in commercial feeds, in order to meet the requirements of the veterinary students. This extra work with the students of the Veterinary College, together with the additional work entailed by the re-organization of our courses into degree and associate classes, has added very materially to our academic work, and encroached so much upon the time formerly given to research work that it has been almost impossible to carry on the experimental work which should be undertaken by this department if it is to be of most service to the farmers of the Province.

In June, Mr. D. R. Sands, demonstrator in this department, returned from the University of Wisconsin where he had taken a year's post-graduate work and obtained the degree of Master of Science.

In July, Mr. W. G. Evans, demonstrator in this department, was granted leave of absence so that he might undertake post-graduate work in Botany at the University of Wisconsin. His place has been filled by the temporary appointment of Mr. R. R. Hurst, a graduate in Botany of the year 1922. On the completion of Mr. Evans' post-graduate work all the men of this department will hold advanced degrees.

### Purity Tests of Commercial Seeds.

Purity tests according to the standards designated by the Dominion Seed Control Act were made of sixty-six samples of clover and timothy seed. Out

of twenty-six samples of red clover seed, ten graded No. 1, one No. 2, seven No. 3, and eight were disqualified. Out of fourteen samples of alsike seed, five graded No. 1, three No. 2, one No. 3 and five were disqualified. Out of eleven samples of timothy seed, one graded No. 1, eight No. 2 and two No. 3. Out of seven samples of sweet clover seed, four graded No. 1, one No. 2, one No. 3, and one was disqualified. Out of four samples of alfalfa seed submitted for purity test three graded No. 1 and one was disqualified. In addition to the above tests of clover and grass seed according to the Seed Control Act, purity tests were made of a large number of samples of seed grain, lawn grass seed, chop and other food stuffs.

## New Plant Diseases.

This summer two diseases were brought to the attention of this department which are apparently new to Ontario, namely, pink root of onions and white rot of grapes. Both these diseases appear to be of considerable economic importance.

In June, a number of diseased onions were received from Mr. Justus Miller, agricultural representative, Essex, with the statement that they had been secured from a marsh bordering on Pelee Point, and that some of the growers on this marsh stated that large patches of their onion plants lacked vigour, and were apparently affected with some kind of blight, which they attributed to soil conditions. An examination of these affected plants led the writer to suspect that the trouble was the pink root of onions, described in Bulletin 273 of the Texas Agricultural Experiment Station. Cultures were made from the diseased plants, and specimens of affected plants were sent to the Bureau of Plant Industry, Washington, D.C. Pure cultures of fusarium were obtained from the diseased plants, and a letter from Dr. W. A. Orton, Pathologist of the Bureau of Plant Industry, Washington, D.C., confirmed the suspicion that the disease was the pink root of onions, caused by the fungus *Fusarium malli*, Taub.

Further correspondence with the local agricultural representative revealed the fact that pink root is quite prevalent in the onion-growing marshes south-east of Leamington. At least fifty acres of onions were affected by this disease this year. Many fields contained large patches of this disease this year, and the growers estimated their loss at not less than 10 per cent. of the crop.

The literature on pink root of onions indicates that the disease is widely distributed, but that outside of the Bermuda onion-growing regions of Southern Texas its economic importance has not yet become generally recognized.

The symptoms of pink root as observed in Ontario are dwarfing and lack of vigour of the growing tops and a dying and drying-up of the roots which usually show a faint, though fairly distinct, pink colouration. The department plans to make a study of this disease next year with the object of working out a satisfactory method for its control.

## White Rot of Grapes.

This disease was first observed in a vineyard near Winona, Ontario. It was later noticed near St. Catharines. The literature on white rot of grapes would indicate that in North America it is usually considered a disease of only secondary economic importance. Observations made in two vineyards in the Niagara district this year show that white rot may cause very serious damage to certain commercial varieties of grapes. The variety which appeared to be most susceptible was Agawam or Rogers No. 15. Unsprayed rows of this variety had over 80 per cent. of the bunches affected and unfit for market.

White rot of grapes at first glance is easily mistaken for black rot. A little careful observation, however, soon makes apparent the distinctive symptoms of white rot. The most striking symptom is the wilting of the berries which at first show no sign of discolouration, rotting or fungus parasite. If the pedicels of these berries are examined, brown lesions will be seen upon them. Sometimes the whole pedicel is brown and shrunken. In the brown areas on the pedicels the pycnidia of the fungus may sometimes be observed. The disease apparently always shows on the pedicels first. Later affected berries develop brown lesions, shrivel up and become covered with light brown pycnidia.

One year's experiments would indicate that white rot, even on very susceptible varieties, is readily prevented by spraying with Bordeaux mixture as recommended for black rot.

### Investigation Work.

During the past year the following experimental work has been carried on:

Co-operative experiments in weed eradication.
Potato disease investigation in co-operation with Agricultural Representatives.
Plot experiments with potato diseases.
Spraying and dusting experiments in the control of late blight of celery.
Field experiments to test the "dry formaldehyde treatment" for the prevention of oat smut.
Experiments in the control of Pod Spot or Anthracnose of Beans.
Experiments in the prevention of Rhizoctonia or Black Scurf of Potatoes.
Investigations regarding the humidity of commercial greenhouses and its effect upon the prevalence of diseases of greenhouse plants.

The above experimental work has been under way for a number of years. The additional experimental projects which it has been found necessary for the Department to undertake are as follows:

A study of the fungus flora of sweet clover ensilage with the object of determining to what extent, if any, fungi are responsible for the development of toxic substances in such ensilage.
Investigations into the cause and means of control of Blight and Root Rot of field peas.
A five years' experiment in co-operation with the Department of Entomology to determine whether financial gains are to be secured by spraying commercial vineyards for the control of insects and fungus diseases, and to determine the time and number of sprayings to recommend for best results.
A cereal treatment project in co-operation with the Crop Protection Institute of the United States.

### Co-operative Experiments in Weed Eradication.

During the past eleven years (1911-1922) co-operative experiments in weed eradication have been carried on by this Department. Over eighty farmers have taken part in this work. As a result of these experiments it is now possible to give definite directions for the practical control of such bad weeds as Perennial Sow Thistle, Twitch Grass, Wild Mustard and Bladder Campion. It is hoped to add to this list from year to year until we have devised practical methods for the control of all the troublesome weeds of the Province.

### Potato Disease Investigation in Co-operation with Agricultural Representatives.

This work has been carried on in order to determine the best source from which to obtain seed potatoes of large yielding varieties, free from the so-called physiological diseases such as leaf roll and mosaic. Seed potatoes of three varieties, namely, Irish Cobbler, Green Mountain and Dooley, were obtained from Northern Ontario, Old Ontario selected stock, Old Ontario common stock

and the Maritime Provinces. Seed from these sources was planted side by side in plots in twenty counties in Ontario. Agricultural representatives co-operating with the farmers in their counties looked after the planting, spraying and cultivation of these plots. During the summer each plot was inspected by a member of this Department. Number of plots inspected, 136; number of plants examined, 27,200; number of farms on which plots were situated, 20.

The following table summarizes the results of these experiments and shows the average percentage of leaf roll and mosaic found in the plants grown from the seed of the three varieties from the four different sources.

*Leaf Roll in Irish Cobblers.*

| | | | |
|---|---|---|---|
| Northern Ontario | .8 | Old Ontario Common | 2 |
| Old Ontario selected | 1.17 | Maritime | 1 |

*Leaf Roll in Green Mountains.*

| | | | |
|---|---|---|---|
| Northern Ontario | .5 | Old Ontario common | 3.2 |
| Old Ontario selected | 1.7 | Maritime | 1 |

*Leaf Roll in Rural New Yorker (Dooley).*

| | | | |
|---|---|---|---|
| Northern Ontario | 1 | Old Ontario | 1.2 |

*Mosaic in Irish Cobblers.*

| | | | |
|---|---|---|---|
| Northern Ontario | 1.08 | Old Ontario common | 9.8 |
| Old Ontario selected | 1 | Maritime | 5.8 |

*Mosaic in Green Mountains.*

| | | | |
|---|---|---|---|
| Northern Ontario | 1 | Old Ontario common | 6 |
| Old Ontario selected | 2.45 | Maritime | 1 |

*Mosaic in Dooley.*

| | | | |
|---|---|---|---|
| Northern Ontario | .5 | Old Ontario | 1.1 |

*Black Leg in Irish Cobblers.*

| | | | |
|---|---|---|---|
| Northern Ontario | .5 | Old Ontario common | 0 |
| Old Ontario selected | .5 | Maritime | 1 |

*Black Leg in Green Mountains.*

| | | | |
|---|---|---|---|
| Northern Ontario | .5 | Old Ontario common | .5 |
| Old Ontario selected | — | Maritime | .5 |

*Black Leg in Dooley.*

| | | | |
|---|---|---|---|
| Northern Ontario | .75 | Old Ontario | 1.5 |

*Foreign in Irish Cobblers.*

| | | | |
|---|---|---|---|
| Northern Ontario | .5 | Old Ontario common | 21.5 |
| Old Ontario selected | 1.9 | Maritime | 1.5 |

*Foreign in Green Mountains.*

| | | | |
|---|---|---|---|
| Northern Ontario | .5 | Old Ontario common | 3.1 |
| Old Ontario selected | 1.5 | Maritime | .5 |

*Foreign in Dooley.*

| | | | |
|---|---|---|---|
| Northern Ontario | .5 | Old Ontario | 3 |

*Misses in Irish Cobblers.*

| | | | |
|---|---|---|---|
| Northern Ontario | 2.7 | Old Ontario common | 4.1 |
| Old Ontario selected | 4.3 | Maritime | 3.9 |

*Misses in Green Mountains.*

| | | | |
|---|---|---|---|
| Northern Ontario | 1.4 | Old Ontario common | 5.7 |
| Old Ontario selected | 3.5 | Maritime | 2.12 |

*Misses in Dooley.*

| | | | |
|---|---|---|---|
| Northern Ontario | 4.65 | Old Ontario | 6.1 |

*Weak in Irish Cobblers.*

| | | | |
|---|---|---|---|
| Northern Ontario | 1.3 | Old Ontario common | 3 |
| Old Ontario selected | 1.5 | Maritime | 1.6 |

*Weak in Green Mountains.*

| | | | |
|---|---|---|---|
| Northern Ontario | .9 | Old Ontario common | 1.2 |
| Old Ontario selected | 2.7 | Maritime | 1.4 |

*Weak in Dooley.*

| | | | |
|---|---|---|---|
| Northern Ontario | 4.6 | Old Ontario | 4.3 |

The following table shows the average yield in bushels per acre of the co-operative potato disease experiments for the past five years, 1918-1922.

Average Yield in Bushels per Acre of Potato Demonstrations, 1918–1922.

| Number of demonstrations | Year | Green Mountain | | | | Irish Cobbler | | | | Rural New Yorker (Dooley) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Nor. Ont. | Maritime | Old Ont. sel. | Old Ont. com. | Nor. Ont. | Maritime | Old Ont. sel. | Old Ont. com. | Nor. Ont. | Old Ont. |
| 22 | 1918 | 174.9 | 141.3 | 168.0 | .. | 154.7 | 148.8 | 122.8 | .. | .. | .. |
| 24 | 1919 | 169.5 | 168.7 | 166.0 | .. | 131.8 | 107.6 | 120.4 | .. | .. | .. |
| 11 | 1920 | 218.3 | 215.7 | 215.8 | 189.2 | 198.0 | 210.1 | 201.1 | 164.9 | 210.7 | 202.3 |
| 12 | 1921 | 182.7 | 166.4 | 170.7 | 154.3 | 155.5 | 148.5 | 146.2 | 134.6 | 132.8 | 146.9 |
| 13 | 1922 | 225.6 | 215.8 | 226.4 | 191.3 | 218.8 | 215.1 | 207.3 | 138.5 | 197.3 | 216.9 |
| Average... | ..... | 194.2 | 181.5 | 189.3 | 178.2 | 171.7 | 166.0 | 159.5 | 146.0 | 170.2 | 188.7 |

## Experiments to Control Late Blight of Celery.

Spraying experiments to control late blight of celery have been conducted in co-operation with the Horticultural Department for the last ten years. During the first eight years such fungicides as Bordeaux mixture, lime-sulphur, sulphocide, formalin and corrosive sublimate were tested in regard to their efficiency in the control of late blight of celery. In the eight years' experiments Bordeaux mixture proved to be the only fungicide which gave uniformly satisfactory results. This year Bordeaux mixture and various dusts, such as Bordeaux dust, sulphur dust, and a mixture of Bordeaux, nicotine sulphate and sulphur, were tested. The late summer was extremely wet, a condition which favoured the development of late blight of celery and made it very hard to control. None of the dusts tested proved satisfactory. The liquid Bordeaux was the only fungicide which gave any satisfactory measure of control.

## Experiments to Test the "Dry Formaldehyde Treatment" for the Prevention of Oat Smut.

In order to prove the effectiveness of the so-called "dry formaldehyde treatment" for the prevention of oat smut co-operative experiments have been conducted by this Department for the past five years. These experiments were all carried on under ordinary farm conditions, most of them on farms in the county of Wellington, in the neighbourhood of the College. In all forty-three field trials have been made and 3,002 bushels of oats treated. The varieties of oats treated include O.A.C. No. 72, Alaska, Banner, White Cluster, Mammoth Cluster and Siberian. The following is a summary of the five years' experiments: Average amount of smut in crop from treated seed, .6 per cent.; average amount

of smut in crop from untreated seed, 3.7 per cent. It is thus seen that the results have been uniformly satisfactory throughout the five years' experiments. No injury to the vitality of the seed has resulted and the control of the smut has been almost perfect. In only one instance has there been more than a trace of smut in any of the fields sown with treated seed. In some of the checks there was over 15 per cent. of smut present.

## Cereal Treatment Project.

This year the Department of Botany co-operated with the Crop Protection Institute of the United States in their cereal treatment project, testing the following methods for the control of grain smuts: Copper sulphate dip, formalin sprinkle, formalin spray (or the so-called "dry formaldehyde treatment" for oats only), copper carbonate dust (two ounces per bushel), dehydrated copper sulphate and lime dust (two ounces per bushel), check, no treatment.

Size of the plots, one-fortieth of an acre. The experiments were conducted in triplicate. The table given below summarizes the results obtained.

The following table shows the amount of smut found in various plots under different treatments. All plots were in triplicate except untreated and hulless oats plots. Averages of the three are given below:

| Plot | Treatment | % of smut | No. of smutted heads per 1/40th of an acre | No. of smutted heads per acre |
|---|---|---|---|---|
| Hulless oats | Untreated | 4.46 | 1,181 | 47,240 |
| " " | Copper carbonate dust | .22 | 24 | 960 |
| Common oats | Untreated | 2.17 | 148 | 5,920 |
| " " | Copper sulphate dust | 2.00 | 156 | 6,240 |
| " " | Copper sulphate dip | .... | 19 | 760 |
| " " | Copper carbonate dust | 1.38 | 113 | 4,520 |
| " " | Formalin sprinkle | .... | 5 | 200 |
| " " | Formalin spray | 0 | 0 | 0 |

Table Showing Weights of Grain Under Various Treatments.

| Plot | Treatment | Date of cutting | Total weight | Weight of grain in pounds | Weight of grain per bushel |
|---|---|---|---|---|---|
| Wheat | Untreated | Aug. 15 | 63.5 | 15-8 5/16 | 55.0 |
| " | Copper sulphate dust | " | 67 | 15-9 9/16 | 54.41 |
| " | Copper sulphate dip | " | 64.8 | 14-10 9/16 | 53.5 |
| " | Copper carbonate dust | " | 68.5 | 15-9 | 53.6 |
| " | Formalin sprinkle | " | 64.6 | 13-8 4/16 | 53.25 |
| Hulless oats | Untreated | Aug. 3 | 131 | 31-0 6/16 | 41.13 |
| " " | Copper carbonate dust | " | 134 | 32-1 5/16 | 40.38 |
| Common oats | Untreated | Aug. 11 | 152 | 51-12 6/16 | 27.0 |
| " " | Copper sulphate dust | " | 157.3 | 50-4 4/16 | 26.29 |
| " " | Copper sulphate dip | " | 155.3 | 53-7 12/16 | 27.58 |
| " " | Copper carbonate dust | " | 154.6 | 50-10 11/16 | 27.45 |
| " " | Formalin sprinkle | " | 153 | 51-13 11/16 | 27.33 |
| " " | Formalin spray | " | 149.3 | 50-7 6/16 | 28.00 |

It will be seen from the above table that the copper sulphate dust and the copper carbonate dust did not prove satisfactory in the control of oat smut this year on the hulled varieties of oats. On the other hand, copper carbonate dust gives good control of oat smut with the Liberty hulless oats without any appreci-

able injury to the germinative capacity of the treated seed. The table also brings out clearly the effectiveness of the so-called dry formaldehyde treatment which is called in the table the formalin spray. In none of the plots of oats in which this method was used could any smut be found. The method appeared to be 100 per cent. efficient this year under plot conditions.

### Investigations into the Cause and Means of Control of Blight and Root Rot of Field Peas.

At the request of Mr. McVannell, agricultural representative for Prince Edward county, an investigation has been started to determine the cause and methods of control of blight and root rot of field peas. This year's investigation reveals the following facts: First, that this disease is very common and destructive in the neighbourhood of Wellington and Picton, and is present to a less extent around Port Hope, Aurora and Lindsay; second, that the disease is carried over in the soil and that fertilizers, such as sulphur, lime, acid phosphate, potassium sulphate, a 383 fertilizer and barnyard manure, when applied much in excess of field requirements, have no effect on the development of the disease; third, that treating the seed with mercuric chloride or formalin will not prevent this disease; fourth, that a species of fusarium is associated with this trouble, but its pathogenicity has not yet been proven; fifth, that different varieties of peas show varying susceptibility to this disease.

Thirteen strains of field peas which have shown resistance to wilt in Michigan have been obtained for tests in Prince Edward county next year.

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## ENTOMOLOGY.

In addition to the teaching work in the regular associate and degree courses, in the short courses in the winter, and in the summer school for teachers; and to the answering of correspondence and the preparation of material for the following year's work, this department devoted itself to extension and research work as follows:

### Extension Work.

1. *Addresses:* Requests from fruit growing associations in many parts of the Province to address them on the subject of spray mixtures, spraying and the maintenance of healthy orchards were accepted wherever it was possible to do so without conflicting with teaching duties. Addresses of this nature were given in such widely separated areas as Brighton, Toronto, St. Thomas, Forest and Thornbury.

2. *Orchard Meetings:* In several parts of the Province, e.g., Morrisburg, Brighton, Aylmer and Essex, the fruit growers sent a joint invitation to set a date at which a meeting could be held, with the object of looking over their orchards and pointing out ways in which they could improve their methods of dealing with orchard problems, especially insects and diseases. Such invitations were accepted.

3. *Special Insect Outbreaks and Control Demonstrations:*

(*a*) *Feather Mite:* A new poultry pest. During the Christmas holidays of 1921 information received from Washington, D.C., showed that a certain poultry plant in Ontario was infested with this new pest. Accordingly the plant was visited and the mite found. This led to further discoveries of the pest.

The method of control was learned and made known to poultrymen through an article sent to the *Poultry Review*.

(*b*) *Red Bugs of the Apple:* An excellent orchard near Lucknow was being ruined by this little-known pest. The orchard was visited, at the request of the owner, the insect pointed out to him, its habits explained and the control method made clear. The result was the securing of a good clean crop which otherwise would have been largely ruined.

(*c*) *Grasshoppers:* At the request of the agricultural representative for aid, Manitoulin Island was visited in June, and a great outbreak of grasshoppers studied. Meetings were called, the situation discussed and methods of control demonstrated. Had nothing been done there is scarcely a doubt that the enormous numbers of grasshoppers present would have devoured practically all the grain crop, and also most of the meadows and pastures. The extent of the outbreak can best be realized by the fact that 29,218 pounds, or almost fifteen tons, of white arsenic were purchased. By means of a simplified formula for the poison bait the expense of treatment was kept down to about fifteen cents per acre. The result of following the methods outlined was the saving of the crop and confidence on the part of farmers that they would be able to deal successfully with any future outbreak.

(*d*) *Spotted Cutworm:* Somewhat serious outbreaks of this cutworm here and there through the Province required personal attention, especially with the object of familiarizing the agricultural representatives with the most efficient control methods, so that they might be able to guide the farmers.

(*e*) *Chinch Bug:* This insect, which is so often very destructive to corn in the United States, this year entered Ontario and caused a loss of about 10 per cent. to the corn in Essex county, as estimated by the agricultural representative. Its presence and the danger of further loss next year required the attention of the entomologist and the publication through the local press of control measures.

## Research Work.

(*a*) *The European Corn Borer:* The investigation of this new insect was continued on a more extensive scale than last year and fair progress was made. There is good reason for believing that a method of control has been discovered, though many of the details have yet to be worked out, especially for counties like Essex and Kent, where corn is grown on a large scale and in a different manner from that practiced in most of the other counties of the Province.

(*b*) *Striped Cucumber Beetle:* The importance of this insect to growers of cucumbers and other cucurbits has been so great, and the methods of control practiced so unsatisfactory that it was considered necessary to begin a study of the insect with the object of finding an efficient and, if possible, cheap method of control. Considerable progress has been made in the work, but at least another season will be required to complete it.

(*c*) *Onion Maggot:* Some further experiments on the control of this insect have been conducted.

(*d*) *Spraying Apple and Cherry Trees:* Each year innovations in spray mixtures and methods require the carrying out of spraying experiments in order that our growers may have the advantage of the most up-to-date and reliable information. This year ten acres of orchard in Norfolk county were used for the experiments.

(*e*) *Spraying Grapes:* For several years this department along with the Botany Department has felt the need of a careful series of grape spraying experiments to determine the best spray mixtures to use for the different diseases,

the best time to apply these, and the minimum number of applications necessary. Reliable data of this kind would be of much value to the grape growers, because at the present time the spraying of grapes is not on a logical basis, but is carried on in more or less of a hit or miss plan.

The experiments were begun this year, but will be continued for four years more. A suitable vineyard for the purpose has been placed at our disposal.

### Publications.

During the year two bulletins by the department have appeared, one on the "Cabbage Maggot," and the other on "Insects Attacking Fruit Trees." The latter is a revised edition, but enlarged and brought up to date.

A small circular on "Cabbage Maggot" was published early in the season to meet the special needs of growers.

Circular letters for the agricultural representatives and for the agricultural press in the particular districts concerned were issued on "Revised Methods of Controlling the European Corn Borer," "The Spotted Cutworm," "Grasshoppers," "The Chinch Bug," and "The Feather Mite."

A joint paper on the "Insects of the Season" was prepared by the Provincial Entomologist and Mr. W. A. Ross of the Dominion Entomological Branch, and published in the annual report of the Entomological Society of Ontario.

Leaflets on methods of collecting and preserving insects were prepared and sent to rural school teachers and also to agricultural representatives for use in connection with fall fairs.

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## CHEMISTRY.

The laboratory exercises in teaching chemistry require so much individual instruction that it has been next to impossible to do satisfactory work with the large classes in attendance in recent years. Next year's graduating class will be much smaller and it will be possible to deal more with the individual and thus give better instruction. However, our first, second and third year classes are larger, because the students of the Ontario Veterinary College join these classes for both lecture and laboratory work.

### Routine Work.

Chemistry is so closely allied to agriculture that hundreds of samples of materials of a very miscellaneous nature are sent to this laboratory for examination. This department is willing and anxious to serve agriculture in any way it can and welcomes the opportunity to help those engaged in agriculture with the intricate problems that are continually arising.

### Soil Survey.

The reconnaissance survey of the older part of this Province was completed in 1919. Owing to Mr. Iveson's death and the difficulty at that time of procuring a trained man to continue the work, nothing was done until this season. The plan adopted to secure a man for this work was to have one of our own men trained where it would be possible for him to return for assistance when difficulties in classification arise. Accordingly Mr. Ruhnke spent the months of June, July and August under the tuition of the Soils Department of Cornell University

in actual field survey. In August he returned and commenced the detailed survey of Ontario soils and succeeded in mapping about 100 square miles of the county of Kent. This is fundamental work in the study of the soils of the Province and will be pushed ahead as fast as possible.

The material for a bulletin dealing with the reconnaissance survey, the origin of the various series and types of soil and their characteristic composition is well in hand and will be ready for publication in the spring.

### Soil Fertility Experimental Work.

While the charting or mapping of the soils has been delayed, the experimental work on soils of definite type has been started. This work has not been continued long enough to warrant publishing positive results, but they are being used as the basis for the publication of timely seasonal suggestions.

One of these permanent experimental plots is on the College farm on soil typical of area north and west of Guelph. A short rotation of a cereal grain, hay and mangels is being followed, with thirty-three plots in each range. The work on this plot is planned to give information for classroom instruction as well as for the farmers cultivating this type of soil. One definite result obtained from this plot is that nitrate of soda as a supplement to stable manure gives better returns than any other form of nitrogen that has been applied. It is also shown that on this soil potash and phosphoric acid can be used to produce profitable yields.

The second experimental plot was established three years ago at Simcoe. The soil is a very light sand, typical of much of the soil of the county of Norfolk. There are six acres in the field, divided into five ranges with ten one-tenth acre plots. The rotation being followed is—potatoes, wheat, peas (for canner) and clover. The fifth range is divided into four sub-ranges for experimental work with market garden crops.

The farmers of this district have had great difficulty in securing a catch of clover. By seeding, without a nurse crop, immediately after harvesting the pea crop, on ground that has been limed, a good catch has been secured in each of the three years it has been tried. The addition of potash and phosphoric acid has materially increased the stand. The yield of peas has been increased 300 per cent. with a substantial profit, and potatoes show nearly as good a result.

The other permanent experimental field is at Welland on clay soil deficient in organic matter and slightly acid. It is typical of the larger part of the counties of Welland and Haldimand. On this field an endeavour will be made by proper rotation, including the use of legumes and cover crops, and by use of stable manure, supplemented by fertilizers to restore the organic matter, to improve the physical condition and increase fertility and at the same time produce crops at a profit.

There are twenty acres in the field; fifteen have been systematically undrained. It is divided into six ranges of fourteen one-fifth acre plots. The ranges run across the drained and undrained ground so that results may be compared. A five year rotation has been adopted consisting of wheat, hay, corn, oats and fallow. One-half of the oat range is seeded to clover and after haying the following year the land is plowed and prepared for wheat. By summer fallowing the other half an opportunity will be afforded to compare the two methods of preparing the land for wheat.

The sixth range is devoted to experiments to determine the relative value of different forms and different quantities of lime. Only one crop has been taken off this ground so that it is too soon to speak of results.

A small barn for the storage of materials, implements and for shelter for workmen has been erected on the plots at Simcoe and Welland.

Great interest has been shown in the plots by the farmers of the neighbourhood both at Simcoe and Welland.

This fall an exhibit illustrating some of the results obtained was made at the Simcoe and Welland fairs. At a suitable time next season a field day will be held on the plots, when the whole plan will be outlined and the results given to date.

New work started this season includes a triangle experiment on potatoes, giving twenty-one different mixtures of nitrogen, phosphoric acid and potash in 20 per cent. variations. This experiment excited great interest in the locality, which is chiefly interested in potato growing, and proved definitely that legumes may be made to furnish all the nitrogen required by the potato crop. It also showed that phosphoric acid and potash could be used with a profit. Thus a O-13-4 mixture increased the crop at the rate of ninety-nine bushels per acre, at a cost of twelve and a half cents per bushel.

Triangle experiments were also laid out in two orchards, one near Brantford, the other near Woodstock. This work was done in co-operation with the Fruit Branch at the Ontario Department of Agriculture. No results were obtained this year as a severe hail storm ruined the fruit for packing.

Later in the season a plan for experiments on fall wheat and clover were evolved, the purpose being to test out this method of treatment in overcoming the difficulty experienced by very many farmers in securing a good stand of clover. The experiment is planned to see the effect of lime, lime and phosphoric acid, and a mixed fertilizer on the wheat and the succeeding crop of clover. This experiment includes four one-half acre plots and has been laid down on three different farms in eight different counties. It may be of interest to note that the lime required for these experiments was supplied gratis by two firms dealing in this product and that the Ontario Fertilizer Association supplied the acid phosphate and the mixed fertilizer free of charge.

## Investigations in Relation to Milk and Its Products.

During the summer the effect of feeding sweet clover on the acid content and the flavour of cows' milk was very thoroughly studied. Altogether over two hundred acidity tests were made with samples taken in different ways in the investigation. No purpose would be served in tabulating the figures of these tests here, for in no single case, either in samples of milk from individual cows or in composite samples of the herd, was any variation from normal acidity of the milk recorded. The acidity of each cow's milk remained constant throughout the entire period of investigation regardless of any change of diet.

The most rigid tests were made regarding flavour. Although slight differences in flavour between individual cows was noted, in no single case could a taste or taint due to the sweet clover be detected.

Co-operating with the Department of Bacteriology, a study was made of the methods used in preserving, keeping and testing composite milk and cream samples. This entailed the analysis of many samples of preservative materials now in the market.

Co-operating with the Dairy Department, a method was worked out for the chemical treatment of buttermilk so as to make it suitable for pasteurization. This chemical was not recommended or tried out from a food standpoint.

Complaints are being made regarding the varying results obtained with the numerous types of test bottles used in Ontario for estimating fat by the Babcock

test. Data has been collected and recommendations will be made from a study of this data for establishing a standard Babcock test bottle throughout Canada acceptable for both dairy and laboratory work.

The Dairy Department and all inspectors in both Western and Eastern Ontario have been supplied with standard acid and alkali solutions. Arrangements have also been made with the Dairy Branch of the Ontario Department of Agriculture for the Department of Chemistry to supply all chemicals necessary for work carried out by inspectors or other dairy officials. This is calculated to eliminate many troubles arising through the purchase of impure chemicals and inaccurate reagents.

### Wheat and Flour Work.

A very large number of samples of wheat and flour were tested for the millers and bakers during the year. At times it was only by Miss Purdy working long hours and every day of the week that the work could be done. A firm has opened a laboratory in London and is soliciting the patronage of our old customers. As the commercial work has grown so as to almost exclude the possibility of doing any research work, the relief from this source will be welcomed.

The wheat of the new crop both in Ontario and the Western Provinces is fully up to that of last year. The Ontario winter's wheat is much better than that of last year. Altogether the miller should have no difficulty in making a flour that will give every satisfaction both in the home and bakery.

As usual the different varieties of spring and fall wheats grown in the experimental plots and the hybrids from the breeding work have been ground and baked so that the Department of Field Husbandry have the baking quality of these wheats as well as yields per acre.

The bulletin of "Flour and Breadmaking" has been revised and enlarged.

### Chemical Study of New Fodder Plants.

In recent years the sunflower mixed with corn has been used in making silage. Comparatively little was known about the composition or how it should be grown to get the best results for feeding purposes. Co-operating with the Department of Field Husbandry, samples were secured of plants grown one, two, four, six, nine and twelve inches apart in a row. These were analyzed to ascertain what influence this had on the composition.

The results were very similar to those obtained from corn grown the same distance apart, viz., the percentage of crude fibre decreased as the plants gained in size. Thus the twelve plants grown at one inch apart contained a greater percentage of fibre than one large plant covering the same area. In the same time, the results show that small plants grown close together furnish a greater weight per acre of the valuable food constituents than larger plants grown farther apart.

Analyses of sweet clover cut at various stages of maturity confirms the idea that the crude fibre increases rapidly as the plant matures. It is, however, very rich in protein, richer than any of our cereal grains, and carries as much of this constituent as bran or shorts. Among the various fodder plants analysed none furnish so large amount of the expensive food constituents as the sweet clover. Unfortunately, it also contains a large amount of indigestible crude fibre. Yet the crude fibre is just as abundant in the sunflower plant, and is not associated with as much valuable food constituents. This places the sunflower plant as a food on a much lower basis than the sweet clover. Further, according to analysis made in the Department of Chemistry, the sunflower plant does not furnish a food as rich in protein as corn and contains very little more fat.

## AGRICULTURAL ECONOMICS.

During the past year the Department of Agricultural Economics has been somewhat reorganized. On the 1st of November, 1921, the Department of Political Economy and the Department of Farm Economics were combined in the Department of Agricultural Economics. The consolidation has enabled a revision of the courses of instruction and eliminated duplication of effort in investigation work.

Early in the year it was deemed advisable to extend the investigational work of the department to include a study of marketing problems. With high production, the Ontario farmer finds that his markets have been curtailed and he feels that the machinery provided to move his products to the consumer is inadequate. His attempts to market his own products have not been too successful, and he is at a loss to know how to proceed. Before proceeding, it is well to investigate, and in view of the fact that little had been done by way of studying the marketing problem, Prof. R. D. Colquette was added to the staff of the department and given charge of marketing investigation. Mr. Colquette had had wide experience in both Canada and United States. In view of the widespread demand for marketing education this branch of the work should be of great value.

The Department of Agricultural Economics is now located in the building recently vacated by the Dairy Department. Some remodelling will be necessary, as is indicated in the estimates submitted for the following year, but for the first time in its history the department now has a permanent home.

The work carried on by the department during the past year may be divided into three groups:

(1) *Research:*
- (a) Farm Management Surveys.
- (b) Studies in the Cost of Production of Crops and Live Stock.
- (c) Marketing Farm Products.

(2) *Extension:*
- (a) Assistance to Farmers in Initial Stages of Organization for Marketing and Community Enterprises.
- (b) Attendance to Farmers' Meetings.
- (c) Assistance at District Representatives' Schools of Agriculture.

(3) *College Instruction:*
- (a) Economic Principles.
- (b) Agricultural Economics including Farm Organization and Management and Marketing.
- (c) Farm Accounting.
- (d) Rural Sociology.

### Farm Management Surveys.

During the past year the surveys previously commenced in the apple-growing districts in Durham and Northumberland counties, in the fruit districts of the Niagara Peninsula, and in corn-growing districts in Kent county, were continued.

This was the third year for the Durham and Northumberland counties survey and the second for the Niagara and Kent surveys.

In Niagara, complete records were obtained of 125 farms. A short report of the findings of this survey was made and published in the spring of 1922.

In Durham and Northumberland counties complete records were obtained from 244 farmers. These records are now being worked up and will be analyzed. Following analysis of the business a report will be issued on the findings of the survey.

The findings of the Kent county survey, which are the result of the analyses of the records of 251 farms, have since been prepared in brief report form, and will be sent out in the course of a few weeks.

In addition to the work that has been done on the surveys which were made during the past year, reports were prepared and sent out both in preliminary or brief form and in full bulletin form of the previous year's surveys in Durham and Northumberland counties and Kent county. The full report of these two surveys covering the farm year, May 1st, 1920, to April 30th, 1921, was published as Bulletin No. 288.

Summarized very briefly, the past year's survey work has shown a continued deflation of values—lack of efficient marketing facilities, resulting generally in decreased revenues accompanied by continued high operating expenses.

## Cost of Production Studies.

During the past year this work has been enlarged to include complete cost accounts on twenty farms in Kent county, so that during the past year eighty farmers have co-operated with the department in studying costs of production. Twenty-five farms are situated in Oxford county, twenty-five in Dufferin county and adjacent parts of the counties of Wellington and Peel, ten in the counties of Northumberland and Durham, and, as stated before, twenty in the county of Kent.

During the year the records from the Oxford county farms and those from the Dufferin county area have been carefully studied, and costs of producing oats, hay, milk, beef, pork, poultry, silage, roots, etc., computed. A similar report is being prepared based upon the reports for the farms in Northumberland and Durham counties, and when complete will give interesting and accurate data on the apple-growing and mixed farming business as carried on in these counties.

The Kent county farmers' books have required the usual careful supervision accorded all farmers' records, during the first year in which the farmer co-operates with the department in cost work. This supervision consists of frequent visits to farmers to clear up difficulties and to see that all farmers are making the entries in the same way in order that no difficulty will be encountered in tabulating, and also to encourage those who feel that the task of keeping detailed accounts is very great.

It should be emphasized that the value of cost accounts to the farmer is as an aid in reorganizing the farm business upon a more profitable basis and not as a basis for price fixing.

## Marketing Farm Products.

During the month of March the first systematic study of marketing to be undertaken in Canada was begun in the cheese producing counties of Ontario. In all about 112 cheese factories or about one-eighth of the total number in the Province were visited by representatives of this department and information obtained regarding the equipment, cost of manufacture, output, management,

etc. This information has been completed and tabulated and will shortly appear in Bulletin No. 291. This investigation of the facilities for marketing cheese is but the first of a series of studies of a similar character.

### Extension Work.

It has always been the policy of this department to take back to the farmer as much as is possible of this information that is obtained from the research work conducted. As in previous years we have always had one member of the staff available for farmers' meetings. There has been a wide demand for such information with the result that many meetings were attended during the year. This is regarded as an important feature of the work of this department.

In addition to these meetings assistance has been given to district representatives in conducting their schools of agriculture. During the past year, however, our work in this connection was confined largely to the three months' courses, at which instruction in farm bookkeeping, farm organization and management and marketing was given by members of the staff of instruction of the department.

The development of co-operative enterprises among farmers has also given rise to a demand for advice in the initial stages of organization. Mr. Colquette, Mr. Leitch and Mr. Jenvey of this department have been called upon to aid in the organization of the Ontario Co-operative Dairy Products, Limited, and have given considerable time in attending meetings for organization, confining their advice to principles of and the necessity for co-operative marketing and explaining the nature of the organization proposed.

This work is not confined to Farmers' Co-operatives. In the case of the appeal of the Dominion Millers' against the decision of the Railway Board regarding rates on wheat and flour, this department was asked to aid in securing data for evidence and Prof. Leitch spent some time upon this project. The value of this work is beyond question. It is a real service to the individual or company and also opens up avenues for investigation giving rise to valuable information.

### Instruction.

It is obvious that a department of economics must give instruction. The courses offered at the College have been extended and revised during the past year. For the first time extended courses have been offered in Rural Sociology. This work is under the direction of Prof. Le Drew. Another course begun during the past year is the course in Agricultural Economics, now being given throughout the Third Year of the Degree Course.

The course in Marketing has been revised and extended, now being given throughout the entire Senior Year, and is given in a less extended form to students taking the Associate Course.

## BACTERIOLOGY.

A total of 4,242 cultures of legume bacteria for seed inoculation were prepared and sent out as follows:

Alfalfa, 1,896; Sweet Clover, 1,036; Red Clover, 758; Peas, 299; Alsike, 129; Beans, 49; Sweet Peas, 37; Soy Beans, 21; Cow Peas, 6; White Clover, 5; Vetch, 4; Crimson Clover, 2.

A total of 134 lactic starters and twenty-seven Bulgaricum cultures were sent to creameries, cheese factories and other applicants.

A total of 256 morbid specimens were examined for infectious diseases, including samples from poultry, cattle, sheep, swine, man, bees, rabbits and plants.

A total of eighty-three samples of farm well water were examined, of which fifty-eight were condemned for pollution.

Samples of milk, butter, ensilage, soil and various other materials were examined for favourable or unfavourable conditions induced by micro-organisms.

## Brief Summary of a Microbiological Investigation of Sweet Clover Silage.

The work summarized here is the bacteriological part of a general investigation re properties and values of sweet clover silage for stock feed, undertaken by several departments of the College, including the Animal Husbandry Department, the Field Husbandry Department, the Chemical Department and the Bacteriological Department. A detailed report will be issued later.

Six lots of sweet clover, cut at different dates, from June 1st to July 20th, were used in the investigation. One lot, cut on June 17th, was ensiled in a large stave farm silo and the other five lots were ensiled in sheet iron experimental silos, three feet by six feet dimensions. As it was inadvisable to open up these experimental silos every few days during the fermentation period to remove samples for microbiological analysis, samples of each cutting were tightly packed in a number of quart sealers and a fresh one of these was opened up every few days for microbiological determinations. With the silage in the large silo, however, samples were taken direct from the silo and temperatures ascertained at the same time.

In taking samples the decomposing surface layer was discarded, the samples being taken from a few inches below this top layer. Samples of the sweet clover before ensiling were also used to determine the microbial flora present at the start.

### Bacterial Activities.

The results showed that there was marked increase of the bacterial content during the first fourteen days from ensiling, the numbers of bacteria present increasing from an average of 30,000,000 per gram of sweet clover on the first day, to an average of over 260,000,000 per gram of silage on the fourteenth day, after which the numbers gradually receded.

This increase in bacterial numbers appeared to be due almost entirely to the development of acid-producing, acid-tolerant and high temperature groups of bacteria, the numbers of which jumped from an average initial number of 9,000,000 per gram of the sweet clover to over 200,000,000 per gram of silage on the fourteenth day, after which the numbers gradually receded.

On the other hand the gelatin liquefying, proteolytic or decomposition group of bacteria showed reduction in numbers from the very beginning. The numbers of this group found on the sweet clover before ensiling gave an average of 8,000,000 per gram and each subsequent analysis of the silage showed a continuous reduction. On the fourteenth day an average of only 1,000,000 per gram of silage was found and on the twenty-first day only 500,000 per gram were present.

(In the surface layer, where decomposition was in progress, this proteolytic group of bacteria was very much in the ascendancy, to the almost entire exclusion of the acid formers).

*Conclusions re Bacterial Content.*

In properly packed sweet clover silage, bacterial activities are greatest during the first fourteen days of ensiling. During this time beneath the surface layer the acid-producing, acid-tolerant, and high temperature groups of bacteria, including *B. acidophilus* and *Bact. bulgaricum* types quickly gain the ascendancy and the proteolytic species are crowded out.

PRESENCE OF YEASTS.

For yeast determinations cultures were made on wort agar. In most samples tested no yeasts were found. In others they were present in only small numbers. In the large farm silo they were found on the third and fifth day from ensiling, the greatest number being 110,000 per gram of silage on the third day. After the tenth day no yeasts were found.

*Conclusions re Yeasts.*

Yeasts had very little influence in modifying the fermentation of the sweet clover silage. This very low yeast content is probably due to the relative absence of available sugars in sweet clover, as, in the case of corn silage, where sugar is plentiful yeasts are usually very active and cause loss of nutrients from the silage by volatilization of the sugars as alcohol.

PRESENCE OF MOLDS.

For mold determinations cultures are made on wort agar.

From the samples of sweet clover before ensiling fourteen genera of molds were identified. Three other forms were observed but not identified, as they produced no spores on culture media.

In making the mold determination from the silage the visibly molded decomposing top layer was discarded as in the case of the bacterial determination.

Only one species of mold, *Oidium lactis*, was found present in the samples of silage examined at any time, and that only in small numbers. The highest numbers of this mold were found in samples taken between the fifth and tenth day after ensiling. After this the numbers rapidly diminished until by the twentieth day, with the exception of two samples, no *oidium lactis* were found.

*Conclusion re Molds.*

If sweet clover silage is well and tightly packed to exclude air, even though many molds are present on the sweet clover when filled into the silo, they will not develop except at the top where air is available.

REACTION.

The colorimetric method was used for the Ph. determination.

The samples of sweet clover before ensiling gave an average reading of Ph. 6.7, which is very close to the neutral point on the acid side. On the seventh day from ensiling the average reaction was Ph. 4.9, showing a marked increase in the acidity. By the fourteenth day the reaction was Ph. 4.6, showing a still further increase of acid. In some cases later determinations gave Ph. 4.4, which was the highest degree of acid obtained at any time. It will be seen from the above that most of the acid was produced during the first seven days of ensiling after which it it increased slowly until a maximum of Ph. 4.4 was reached in some cases.

This is not so high an acid content as is usually obtained in corn silage.

### Temperatures.

The temperatures taken in the silage of the large stave farm silo about eighteen inches from the surface read 44° C. on the 5th day, 45° C. on the 13th day, 46° C. on the 20th day, 44° C. on the 26th day, 44° C. on the 33rd day, 42° C. on the 40th day, and 37° C. on the 75th day.

### *Conclusions.*

In silage made from sweet clover before it is too mature, that is well and tightly packed in the silo to exclude air, the conditions prevailing induce a fermentation apparently due mainly to certain acid-forming bacteria, accompanied by a rise in temperature and inhibition of the growth of putrefactive bacteria, yeasts and molds.

### Milk of Dairy School Patrons.

Temperature, acidity and sediment tests, and also bacterial counts, have been made of a number of lots of milk as delivered to the Dairy Department by its patrons during the summer months. The results of these tests indicate that there is considerable room for improvement in the sanitary quality of the milk before it can be characterized as satisfactory for manufacturing purposes. Improper cooling and the use of imperfectly sterilized utensils on the farm are largely responsible for the high bacterial counts where such have been obtained.

### Hammond's Colour Test for Pasteurized Milk.

The need for a simple and reliable test to distinguish raw milk from milk which has been pasteurized at relatively low temperatures (140° to 145° F. for twenty to thirty minutes) has long been felt by those engaged in the control of city milk supplies. The Hammond "Dichrome" Colour Test, as described in *Canadian Chemistry and Metallurgy*, Vol. 6 (1922), p. 58, has been given a careful trial in this connection. This test when applied both to raw milk and to milk pasteurized at different temperatures results in a most complicated series of colour changes. Both the character of these changes and the time required to bring them about vary with different lots of milk, and are undoubtedly related to the kinds and numbers of bacteria present in the different samples. But, as the kinds and numbers of bacteria in both raw and pasteurized milk vary so greatly from time to time, depending on the source from which the milk comes, method of pasteurization, age, etc., no standard series of colour changes can be established by which to judge the colour changes observed.

We have found that colour changes taking place in raw milk of low bacterial content are at times very similar to those taking place in efficiently pasteurized milk. We have also learned that no sharp and distinct differentiation of colour change distinguishes milk heated to safe and to unsafe temperatures, which fact renders the test useless from a public health point of view.

The above facts, along with the difficulty of recording colour changes in any simple way, and the long period (fourteen to sixteen hours) out of each twenty-four hours, when the samples undergoing the test would not be under observation, render the test, in our opinion, entirely unreliable for the purpose suggested, and essentially impracticable for use by milk inspectors and others interested in a test of this kind.

### Micro-organisms in Creamery Butter.

Bacteriological examinations of samples of creamery butter made from pasteurized cream have been carried on during the months of May to September, inclusive, in co-operation with the Provincial Butter Grading Station at Toronto and the Creamery Inspection staff.

Six hundred and thirty-nine samples from fifty-eight creameries have been analyzed during 1922, compared with 574 in 1921 and 315 in 1920.

In the routine examination of these samples determinations of their mold and yeast content only are made, but in special cases, where it is thought that the information may be of value, determinations of the bacterial content are also made.

Mold counts during the past season have been quite low in the majority of cases; yeast counts on the other hand in many cases run considerably higher that good practice allows. Yeast counts obtained from 537 "Storch test negative" samples in 1921 and from 613 ditto in 1922, are tabulated below:

| Yeast Counts per c.c. of butter | 1921 | | 1922 | |
|---|---|---|---|---|
| | Number | Per cent. | Number | Per cent. |
| 0— 99 | 54 | 10.1 | 180 | 29.4 |
| 100— 499 | 95 | 17.7 } 37.1 | 152 | 24.8 } 68.7 |
| 500— 999 | 50 | 9.3 | 89 | 14.5 |
| 1,000— 4,999 | 152 | 28.3 | 143 | 23.3 |
| 5,000—99,999 | 132 | 24.5 } 62.9 | 44 | 7.2 } 31.3 |
| 100,000 and over | 54 | 10.1 | 5 | 0.8 |
| Total | 537 | | 613 | |

An examination of the above figures shows a striking reduction in the number of high yeast content samples for 1922 as compared with 1921. This is undoubtedly due in part to the comparatively cool summer of 1922 as compared with the excessively hot summer of 1921, and also, we are inclined to believe, to the educational work which has been carried on among buttermakers and creamerymen along this line.

Creamerymen all over the Province have expressed their appreciation of this service, which undoubtedly leads to the more efficient operation of the plants under their control.

## FARM MECHANICS AND MANUAL TRAINING.

The scope and character of the work of this Department is somewhat varied, and therefore difficult to arrange for with a limited staff. Instruction is given in drawing, woodworking, forging, metalworking, farm machinery, ropework and harness-mending; in principles of gasoline engines and tractors, together with attachments and accessories; ignition and cooling systems; elementary building construction and concrete. Students attending Macdonald Institute receive instruction in Colour and Design as applied to home decoration, and in Basketry. Instruction in the care and use of tools is given to Short Course students in Apiculture, and in forging, babbitting, and ropework to students attending the Short Course in Farm Power.

The increased number of classes is taxing heavily the teaching resources of this Department. Temporary relief was secured by enlisting the services of Mr. Kline, the blacksmith, to take the forging, but this arrangement cannot be considered satisfactory as Mr. Kline is only available when his own work is not too pressing. This creates a situation both harassing and perplexing, making

it difficult to carry out the schedule of instruction, indeed it materially affects the efficiency of the instruction. It is very desirable to engage competent help if better arrangements and more definite understanding cannot be made for Mr. Kline's services. Through the generosity of a number of manufacturers of farm machinery our laboratory is gradually being fitted up with the necessary equipment.

In addition to those listed in my last report the International Harvester Co., of Hamilton, have arranged to ship for our use for instructional purposes:

1 Deering Binder, 6 ft. cut.
1 McCormick Mower, 6 ft. cut.
1 No. 121 Hamilton Walking Plow.
1 No. 2-C Sulky Plow.
1 Little Genius two-furrow tractor plow.
1 No. 5 Manure Spreader.
1 No. 14/16 Cutthrow Disc Harrow.
1 13 Marker During Disc Drill.
1 No. 2 Corn Planter.

We are also indebted to the following firms for valuable help with the course in Farm Power:

The Ford Motor Co., Ford, Ont.—Tractor and instructor.
The Dominion Steel Products, Brantford, Ont.—Lecturer and demonstrator on farm lightning plant.
International Harvester Co., Hamilton, Ont.—Tractor and instructor.
Massey-Harris, Toronto—Tractor and instructor.
The Cleveland Tractor Co., Montreal—Two tractors and two instructors.
The Chase Tractor Co., Toronto—Tractor and two instructors.
The Geo. White Co., London—Tractor and instructor.

The Lightning plant loaned by the Dominion Steel Products, of Brantford, has been installed in the basement of the building. It was assembled by a mechanic sent by the firm and connected up by Mr. Green, the College engineer, and is giving every satisfaction.

Many requests have been received for drawings of cupboards, trapnests, and small portable constructions such as hog-cabins, hoppers, etc., and information on various matters, including gasoline engines and tractors, all of which have received our best attention.

The Department takes this opportunity to thank the various firms for their liberal support in sending help and machinery.

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## APICULTURE.

The work of this department is divided into teaching, care of the College apiaries (four), apiary inspection throughout the Province, and the Ontario Beekeepers' Association.

June, 1921, saw the first graduates in Apiculture from the Ontario Agricultural College. Three men received their degree. To enable the apiculture specialists to secure the largest possible amount of practical experience, the College apiary has been increased to one hundred and fifty colonies. These colonies have been divided into four apiaries, three near Guelph and one at the Experimental Farm at Ridgetown. This latter apiary is for the rearing of pedigreed queens.

Over forty inspectors were inspecting apiaries throughout the Province this past season, in an effort to control foul brood among the colonies in infected apiaries.

The work of the Ontario Beekeepers' Association developed into a larger sphere than in previous years. In an effort to organize the beekeepers of the Province into a co-operative buying and selling association, the secretary's office purchased bees, queens, bee supplies and honey containers to the value of $86,952.35. The Association showed a year's business of $94,829.35. By buying in a co-operative way, the secretary's office saved the beekeepers $13,810.80 directly, and a very considerable amount indirectly, because of the lower prices paid for honey containers bought direct from the manufacturers. An effort is now being made to form a co-operative buying and selling organization.

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## MACDONALD INSTITUTE.

### The Normal Course in Home Economics.

During 1921, arrangements were made with the Ontario Department of Education whereby the two-year Normal Course in Home Economics at Macdonald Institute will be accepted as a preparation for a certificate of qualification as teachers of Household Science in the public, separate, high or continuation schools, in the case of candidates who hold First or Second Class Public School Teachers' Certificates or an equivalent standing approved by the Minister of Education.

Thirteen entered this course in September, 1920; twelve passed to the senior class in June, 1921; eleven passed the final examinations in June, 1921, and have received the Macdonald Institute Teachers' Certificate in Home Economics.

Nineteen entered the course in September, 1921; eighteen passed to the senior class in June, 1922, and seventeen are now in attendance.

Eleven entered the junior class in September, 1922, and are now in attendance.

### The Associate Course.

Twenty-four entered this course in September, 1920; twenty-three passed to the senior class in June, 1921; sixteen passed the final examinations in June, 1921, and have received the Macdonald Institute Associate Diploma..

Thirty-one entered the course in September, 1921; twenty-nine passed to the senior class in June, 1922, and twenty-six are now in attendance.

Forty entered the junior class in September, 1922, and thirty-nine are now in attendance.

The academic requirement for entrance to the Associate Course is now Junior Matriculation. The new regulation began with the class entering September, 1922.

### The Institutional Management Course.

Eighteen entered this course in September, 1920; fifteen passed to the senior class in June, 1921, nine passed the final examinations in June, 1921, and have received the Macdonald Institute Institutional Management certificate.

Fourteen entered the course in September, 1921; thirteen passed to the senior class in June, 1922; one of the 1920 class re-entered in September, 1922, and eleven are now in attendance.

Eight entered the junior class in September, 1922, and seven are now in attendance.

Six former graduates have completed six months' institutional housekeeping and have been granted the Macdonald Institute Professional Housekeeper's Certificate.

### The Homemaker Course.

Thirty-five entered the course in September, 1921; eighteen passed the final examinations in June, 1922, and have received the Macdonald Institute Homemaker Diploma.

Forty were admitted to the course in September, 1922, and thirty-nine are now in attendance.

### The Short Course.

There have been in attendance:

| | |
|---|---|
| In Winter term—January, 1922, to March, 1922 | 19 |
| In Spring term—April, 1922, to June, 1922 | 6 |
| In Autumn term—September, 1922, to December, 1922 | 16 |

### Optional Courses.

Eighteen optional students joined various clothing, food and lecture courses during the year.

### Student Workers.

Three student workers have taken the opportunity to pay for courses by serving in the dining hall; one served nine months, and at present one is serving three months and a second is serving nine months.

### Summary of Attendance in 1922.

| | |
|---|---|
| A—January to June, completing the College year 1921-1922. | |
| 1. Normal Home Economics—two-year course:— | |
| (a) Juniors | 18 |
| (b) Seniors | 12 |
| 2. Associate—two-year course:— | |
| (a) Juniors | 31 |
| (b) Seniors | 22 |
| 3. Institutional Management—two-year course:— | |
| (a) Juniors | 14 |
| (b) Seniors | 12 |
| 4. Homemaker—one-year course | 29 |
| 5. Short Course in Domestic Science:— | |
| (a) Winter | 19 |
| (b) Spring | 6 |
| 6. Optional Students:— | |
| (a) Winter | 5 |
| (b) Spring | 9 |
| 7. Student Workers | 1 |
| 8. Public School Classes | 48 |
| B—September to December, opening the College year of 1922-1923. | |
| 1. Normal Home Economics—two-year courses:— | |
| (a) Juniors | 11 |
| (b) Seniors | 17 |
| 2. Associates—two-year courses:— | |
| (a) Juniors | 40 |
| (b) Seniors | 26 |
| 3. Institutional Management—two-year course:— | |
| (a) Juniors | 8 |
| (b) Seniors | 11 |
| 4. Homemaker—one-year course | 40 |
| 5. Short Course in Domestic Science | 16 |
| 6. Optional Course | 4 |
| 7. Student Workers | 1 |
| 8. Public School Classes | 59 |
| C—Students entered in both above lists | 53 |
| D—Total number of students in 1921 | 366 |
| Total number of students in 1922 | 396 |

### Report of Loan Collection for Women's Institutes.

Requests—

| | |
|---|---|
| Home Interests | 24 |
| House | 10 |
| Nutrition and Food | 72 |
| Health | 9 |
| Household Economics | 13 |
| Education | 13 |
| Clubs, Social Service | 38 |
| Textiles and Clothing | 15 |
| Miscellaneous | 16 |
| Referred to Massey | 185 |
| Could not help | 2 |
| Special letter | 1 |
| Total | 398 |

Answered by—

838 folders, articles and clippings.
102 books.

## APPOINTMENTS OF MACDONALD INSTITUTE GRADUATES IN 1921-1922.

### Teachers.

| | *Class of* | *Appointed to* |
|---|---|---|
| Miss Jean Flatt | 1919 | Board of Education, Australia. |
| " Marjorie Alexander | 1922 | Board of Education, Edmonton, Alta. |
| " Verna Bambridge | 1922 | Board of Education, Ottawa Technical School, Ottawa, Ont. |
| " Margaret K. Blain | 1922 | Department of Agriculture, Olds, Alta. |
| " Ada Gilchrist | 1922 | Alma College, St. Thomas, Ontario. |
| " Mary L. Grant | 1921 | Board of Education, Vancouver, B.C. |
| " Mary Hiltz | 1920 | Department of Agriculture, Manitoba Agricultural College, Winnipeg, Manitoba. |
| " Bessie Reid | 1922 | Truro Normal College, Truro, N.S. |
| " Marjorie E. Robinson | 1921 | Board of Education, Owen Sound, Ont. |
| " Ethel Chapman | 1912 | Department of Agriculture, Toronto, Ont. |
| " Bessie Jackson | 1922 | Department of Agriculture, Toronto, Ont. |
| " Nellie Kidd | 1922 | Department of Agriculture, Toronto, Ont. |
| " Helen Miller | 1922 | Institutes Branch, Truro, N.S. |
| " Esther Slicter | 1922 | Department of Agriculture, Toronto, Ont. |

### Institutional Managers and Dietitians.

| | | |
|---|---|---|
| Miss Careta McKiel | 1919 | Department of Agriculture, Ontario Agricultural College, Guelph, Ont. |
| " Ruth Fowler | 1921 | Women's Hospital, Cleveland, Ohio. |
| " Gertrude Woods | 1921 | Winnipeg General Hospital, Winnipeg, Man. |
| " Violet J. Craig | 1922 | Welfare Island City Hospital, New York. |
| Mrs. Mabel Davis | 1918 | Y.W.C.A., Windsor, Ont. |
| Miss G. Bier | 1920 | Sick Children's Hospital, Toronto, Ont. |
| " M. Bristol | 1920 | Belleville General Hospital, Belleville, Ont. |
| " L. Cody | 1922 | Victoria Hospital, Fredericton, N.B. |
| " V. Fleming | 1918 | Ninette Sanatorium, Ninette, Man. |
| " L. G. Freeborn | 1921 | Welland General Hospital, Welland, Ont. |
| " Helen Gayman | 1922 | Department of Agriculture, Ontario Agricultural College. Guelph, Ont. |
| " Jean Gilchrist | 1921 | Hudson City Hospital, Hudson, N.Y. |
| " Ruby Gillespie | 1922 | Y.W.C.A., Calgary, Alta. |
| " Beatrice Higginson | 1921 | Mohawk Institute, Brantford, Ont. |
| " Carrie Hill | 1922 | Cornwall General Hospital, Cornwall, Ont. |
| " F. M. Hilliard | 1919 | Dixon Public Hospital, Dixon, Ill. |
| " Muriel Hutchins | 1921 | Brandon College, Brandon, Man. |
| " Mary Kelly | 1921 | Victoria Hospital, London, Ont. |
| " D. A. Kent | 1921 | Judson Memorial Health Centre, New York. |
| " W. M. Lewis | 1922 | Chestnut St. Hospital, Louisville, Kentucky. |
| " Mabel Malcolmson | 1921 | Toronto General Hospital, Toronto, Ont. |
| " Bertha Yates | 1921 | General Hospital, Syracuse, N.Y. |
| " Marjorie Bell | 1922 | Welfare Department, Nutritional Clinic, Halifax, N.S |
| " Vera Stock | 1921 | Victoria Hospital, London, Ont. |

# FINANCIAL STATEMENT

## COLLEGE DEPARTMENT.

### Expenditure.

| | |
|---|---|
| Salaries and wages | $166,716 94 |
| Servants' pay-list | 12,572 09 |
| Mechanical supplies | 249 39 |
| Library | 2,997 75 |
| Meat, bread, groceries, laundry, engine-room supplies and fuel | 94,662 73 |
| Advertising, printing, postage and stationery | 5,979 63 |
| Short Courses | 2,990 63 |
| Temporary assistance | 3,993 88 |
| Purchase and maintenance of automobiles, trucks and tractors, O.A.C. | 3,888 05 |
| Student labour | 2,334 68 |
| Travelling expenses and extra lectures | 3,313 55 |
| Expenses College judging team | 400 00 |
| Scholarships | 100 00 |
| Telephone service, rents, etc | 1,101 79 |
| Furnishings and repairs | 9,199 45 |
| Feed of horses | 64 95 |
| Contingencies | 1,590 88 |
| Rebate fees to students | 2,975 00 |
| Maintenance of gymnasium | 888 56 |
| Total expenditure | $316,019 95 |
| Less revenue | 143,874 15 |
| Net expenditure | $172,145 80 |

### Revenue.

| | |
|---|---|
| Board | $108,451 43 |
| Tuition and laboratory fees | 28,124 00 |
| Rent of rooms | 292 00 |
| Rent of houses | 5,071 50 |
| Rent of post-office boxes | 40 00 |
| Supplemental examinations | 306 00 |
| College fines, breakages, etc | 640 75 |
| Macdonald fines, breakages, etc | 413 87 |
| Sundries | 534 60 |
| Total revenue | $143,874 15 |

### Student Labour.

| *Total per Month.* | | *To Different Departments.* | |
|---|---|---|---|
| November | $332 36 | College | $931 39 |
| December and January | 155 83 | Chemical | 14 51 |
| February | 208 61 | Botany | 000 00 |
| March | 461 83 | Bacteriology | 178 67 |
| April | 226 50 | Physics | 27 |
| May and June | 263 94 | Gymnasium | 122 54 |
| July | 114 79 | Library | 36 |
| August | 198 42 | Farm | 215 52 |
| September | 71 75 | Experimental | 513 66 |
| October | 300 65 | Dairy | 12 87 |
| | | Poultry | 188 38 |
| Total | $2,334 68 | Horticulture | 129 22 |
| | | Mechanical | 16 65 |
| | | Apiculture | 9 13 |
| | | Farm Economics | 1 51 |
| | | Total | $2,334 68 |

## FORESTRY.

### Expenditure.

| | |
|---|---|
| Contingencies | $999 10 |

## BACTERIOLOGY DEPARTMENT.

### Expenditure.

| | | |
|---|---|---|
| Stenographer | $ | 800 00 |
| Janitor | | 950 00 |
| Supplies and expenses | | 2,861 10 |
| Total expenditure | $ | 4,611 10 |
| Less revenue | | 2,510 75 |
| Net expenditure | $ | 2,100 35 |

### Revenue.

| | | |
|---|---|---|
| Sale of Cultures, as per statements rendered monthly | $ | 2,510 75 |

## BOTANY DEPARTMENT.

### Expenditure.

| | | |
|---|---|---|
| Stenographer | $ | 720 00 |
| Janitor (part time) | | 450 00 |
| Travelling and other expenses in connection with plant diseases | | 499 34 |
| Supplies and expenses | | 1,999 59 |
| Total expenditure | $ | 3,668 93 |

## CHEMISTRY DEPARTMENT.

### Expenditure.

| | | |
|---|---|---|
| Stenographer | $ | 720 00 |
| Janitor | | 450 00 |
| Supplies and expenses | | 4,789 01 |
| Total expenditure | $ | 5,959 01 |
| Less revenue | | 937 55 |
| Net expenditure | $ | 5,021 46 |

### Revenue.

| | | |
|---|---|---|
| Chemical Analyses, as per statements rendered monthly | $ | 937 55 |

## ENTOMOLOGY DEPARTMENT.

### Expenditure.

| | | |
|---|---|---|
| Supplies and expenses | $ | 2,496 54 |
| Corn-borer investigation | | 3,278 67 |
| Total expenditure | $ | 5,775 21 |

## ENGLISH DEPARTMENT.

### Expenditure.

| | | |
|---|---|---|
| Supplies and expenses | $ | 499 13 |

## MANUAL TRAINING DEPARTMENT.

### Expenditure.

| | | |
|---|---|---|
| Janitor | $ | 950 00 |
| Supplies and expenses | | 1,235 09 |
| Total expenditure | $ | 2,185 09 |

## PHYSICS DEPARTMENT.

### Expenditure.

| | | |
|---|---|---|
| Stenographer | | $ 670 00 |
| Salaries and expenses in drainage work | | 7,496 28 |
| Supplies and expenses | | 1,793 07 |
| Total expenditure | | $ 9,959 35 |

## FARM ECONOMICS DEPARTMENT.

### Expenditure.

| | |
|---|---|
| Farm surveys, services, travelling and other expenses, and equipment purchase and maintenance of automobiles, and contingencies | $ 29,072 51 |

## MACDONALD INSTITUTE AND HALL.

### Expenditure.

| | | |
|---|---|---|
| Salaries and wages | | $ 25,446 93 |
| Servants' pay-list | | 2,669 13 |
| Meat, bread, groceries, furnishings, laundry, engine-room supplies, fuel, and labour on Macdonald grounds | | 24,973 31 |
| Maintenance of laboratories in Institute | | 2,599 82 |
| Library and stationery | | 725 50 |
| Contingencies | | 395 93 |
| Total expenditure | | $ 56,810 62 |

## FARM DEPARTMENT.

### Expenditure.

| | | |
|---|---|---|
| Permanent improvements | | $ 1,080 13 |
| Wages of men and foreman | | 15,131 26 |
| Purchase and maintenance of live stock | | 12,954 33 |
| Farm maintenance (including repairs, blacksmithing, binder-twine, seeds, furnishings, fuel, light, advertising, printing, stationery, tools, implements, etc.) | | 4,489 39 |
| Stenographer | | 700 00 |
| Contingencies | | 238 00 |
| Total expenditure | | $ 34,593 11 |
| Less revenue | | 18,812 50 |
| Net expenditure | | $ 15,780 61 |

## FARM DEPARTMENT.

### Revenue.

| | | |
|---|---|---|
| Sale of Cattle:— | | |
| 13 Bulls at from $45.00 to $275.00 | $ 1,405 00 | |
| 1 Bull, 1,210 lbs. at 4c. | 48 40 | |
| 15 Cows at from $12.50 to $600.00 | 2,885 00 | |
| 1 Heifer, 1,175 lbs. at 4c. | 47 00 | |
| 2 Steers at $54.00 and $100.00 | 154 00 | |
| 7 Steers, 8,809½ lbs. at from 8c. to 14c. | 847 64 | |
| 5 Calves at from $5.00 to $20.00 | 40 00 | |
| 5 Calves, 850 lbs. at from 8¼c. to 10¾c. | 85 49 | |
| | | $ 5,512 53 |
| Sale of Pigs:— | | |
| 19 Boars at from $15.00 to $50.00 | $ 432 50 | |
| 60 Sows at from $10.00 to $55.00 | 2,025 00 | |
| 82 Hogs, 18,187 lbs. at from 9c. to 14c. | 2,163 52 | |
| | | 4,621 02 |

| | | |
|---|---|---|
| Sale of Sheep:— | | |
| 16 Rams at from $7.00 to $22.50 | $ 207 50 | |
| 22 Ewes at from $3.00 to $17.50 | 197 50 | |
| 24 Lambs, 2,520 lbs. at from 11c. to 23c | 300 08 | |
| | | $ 705 08 |
| Sale of Milk:— | | |
| 26,525½ quarts at 7c | $ 1,856 79 | |
| 285 lbs. at $2.10 cwt | 5 99 | |
| 142,775 lbs. at $2.80 cwt | 3,997 70 | |
| 2,266.22 lbs. butter-fat at from 32c. to 50½c. lb | 841 69 | |
| 5 quarts cream at 40c | 2 00 | |
| | | $ 6,704 17 |
| Service of animals | | 390 00 |
| Sale of 8,370 lbs. of ensilage at $6.00 per ton | | 25 11 |
| Sale of 120 bushels of turnips at 20c | | 24 00 |
| Sale of ½ ton hay for | | 10 00 |
| Sale of 19 loads wood for | | 101 50 |
| Sale of 3 old horses for | | 235 00 |
| Sale of 453 lbs. wool at 11.83c | | 53 59 |
| Sundries | | 10 50 |
| Feed of Horses:—Hay for 14 horses for 1 year at $30.00 each | | 420 00 |
| Total revenue | | $ 18,812 50 |

### Expenditure.

| | |
|---|---|
| Permanent improvements | $ 1,810 01 |
| Foreman, teamsters and labourers | 14,476 30 |
| Seeds, manure and special fertilizers | 780 19 |
| Furnishings, implements, repairs, blacksmithing, etc | 1,194 40 |
| Printing, postage, stationery, contingencies, etc | 524 02 |
| Purchase and feed of horses | 409 32 |
| Stenographers (three) | 2,350 00 |
| Total expenditure | $ 21,544 24 |

## DAIRY DEPARTMENT.

### Expenditure.

| | |
|---|---|
| Permanent improvements | $ 468 25 |
| Wages, including cheese makers, butter makers, and bookkeeper, assistant and official tester of dairy cattle | 2,018 52 |
| Purchasing, hauling and manufacturing milk into butter and cheese | 3,063 25 |
| Furniture, furnishings, repairs, etc., laboratory expenses, gas, chemicals, etc., and contingencies | 1,489 09 |
| Fuel and light | 933 84 |
| Total expenditure | $ 7,972 95 |
| Less revenue | 2,288 69 |
| Net expenditure | $ 5,684 26 |

### Revenue.

| | |
|---|---|
| Sale of cheese, 7,072¼ lbs. at from 17 to 60c | $ 1,366 76 |
| Sale of butter, 159 lbs. at from 25 to 50c | 55 55 |
| Sale of cream, 531 qts. at from 45 to 80c | 265 40 |
| Sale of milk, 196 qts. at 10c | 19 60 |
| Sale of skim and buttermilk, 166,810 lbs. at 30c cwt | 500 43 |
| Sale of wheymilk, 103,000 lbs. at 5c. cwt | 51 50 |
| Sundries | 29 45 |
| Total revenue | $ 2,288 69 |

## DAIRY SCHOOL.

### Expenditure.

| | | |
|---|---|---|
| Permanent improvements, cement floors, walks, etc | $ | 43 20 |
| Wages of instructors, engineer, janitor, stenographer and bookkeeper | | 1,863 73 |
| Cleaning, painting, repairs and contingencies | | 297 26 |
| Dairy appliances, separators, vats, expenses cheese and butter judges, inspecting factories, etc | | 682 95 |
| Advertising, printing, stationery, postage, books, papers, etc | | 120 61 |
| Fuel and light | | 463 03 |
| Purchase of milk for cheese making and cost of hauling milk and cream | | 3,478 30 |
| Total expenditure | $ | 6,949 08 |
| Less revenue | | 2,287 65 |
| Net expenditure | $ | 4,661 43 |

### Revenue.

| | | |
|---|---|---|
| Sale of cheese, 6,796 lbs. at from 15 to 60c | $ | 1,260 38 |
| Sale of butter, 693 lbs. at from 25 to 35c | | 205 75 |
| Sale of cream, 471½ qts. at from 50 to 80c | | 236 20 |
| Sale of milk, 168½ qts. at 10c | | 16 85 |
| Sale of skim and buttermilk, 130,590 lbs. at 30c. cwt | | 391 77 |
| Sale of wheymilk, 72,000 lbs. at 5c. cwt | | 36 00 |
| Sundries | | 10 70 |
| Fees | | 130 00 |
| Total revenue | $ | 2,287 65 |

## POULTRY DEPARTMENT.

### Expenditure.

| | | |
|---|---|---|
| Wages | $ | 5,195 00 |
| Furnishings and repairs | | 2,395 22 |
| Permanent improvements | | 212 48 |
| Purchase of stock | | 277 13 |
| Fuel, light and contingencies | | 2,289 65 |
| Experiments with incubator, fattening and feeds | | 11,158 13 |
| Feed of horses | | 30 00 |
| Poultry extension work, including purchase and maintenance of automobiles | | 3,342 32 |
| Stenographer | | 900 00 |
| Purchase of horse | | 50 00 |
| Total expenditure | $ | 25,849 93 |
| Less revenue | | 16,263 93 |
| New expenditure | $ | 9,586 00 |

### Revenue.

| | | | |
|---|---|---|---|
| Sale of Live Poultry:— | | | |
| 2,012 live birds for | $ | 4,971 25 | |
| 1,184 day-old chicks for | | 116 40 | |
| | | | $ 5,087 65 |
| Sale of Dressed Poultry:— | | | |
| 6,977⅝ lbs. at from 18½ to 70c | | | 1,924 84 |
| Sale of Eggs for Hatching:— | | | |
| 620 settings at from $1.00 to $5.00 | $ | 1,212 20 | |
| 17,437 eggs at from 6c to $1.00 each | | 2,133 66 | |
| | | | 3,345 86 |
| Sale of Eggs for Domestic Use:— | | | |
| 15,638½ doz. at from 20 to 85c | | | 5,804 58 |
| Prize-money Ottawa egg-laying contest | | | 101 00 |
| Total revenue | | | $ 16,263 93 |

## HORTICULTURE DEPARTMENT.

### Expenditure.

| | |
|---|---|
| Permanent improvements | $ 499 29 |
| Foreman, firemen, teamsters and labourers | 16,813 92 |
| Trees, plants, seeds, bulbs, fertilizers, implements, tools, furnishings, repairs and contingencies | 4,499 83 |
| Fuel and light | 2,100 48 |
| Feed of horses | 585 99 |
| Stenographers (two) | 1,250 00 |
| Draughtsman | 1,800 00 |
| Purchase of two horses | 375 00 |
| Total expenditure | $ 27,924 51 |
| Less revenue | 1,878 64 |
| Net expenditure | $ 26,045 87 |

### Revenue.

| | |
|---|---|
| Sale of fruit, vegetables, etc., as per itemized statements rendered monthly | $ 1,878 64 |

## APICULTURE DEPARTMENT.

### Expenditure.

| | |
|---|---|
| To provide for equipment, maintenance and wages | $ 1,599 99 |
| Stenographers (two) | 1,349 99 |
| Queen rearing apiary maintenance | 1,999 52 |
| Total expenditure | $ 4,949 50 |
| Less revenue | 242 80 |
| Net expenditure | $ 4,706 70 |

### Revenue.

| | |
|---|---|
| Sale of honey, etc., as per itemized statements rendered monthly | $ 242 80 |

## SUMMARY.

| | Expenditure. | Revenue. | Net Expenditure. |
|---|---|---|---|
| College | $ 316,019 95 | $143,874 15 | $172,145 80 |
| Forestry | 999 10 | ..... | 999 10 |
| Bacteriology | 4,611 10 | 2,510 75 | 2,100 35 |
| Botany | 3,668 93 | ..... | 3,668 93 |
| Chemistry | 5,959 01 | 937 55 | 5,021 46 |
| Entomology | 5,775 21 | ..... | 5,775 21 |
| English | 499 13 | ..... | 499 13 |
| Manual Training | 2,185 09 | ..... | 2,185 09 |
| Physics | 9,959 35 | ..... | 9,959 35 |
| Farm Economics | 29,072 51 | ..... | 29,072 51 |
| Macdonald Institute and Hall | 56,810 62 | ..... | 56,810 62 |
| Farm | 34,593 11 | 18,812 50 | 15,780 61 |
| Field Husbandry | 21,544 24 | ..... | 21,544 24 |
| Dairy | 7,972 95 | 2,288 69 | 5,684 26 |
| Dairy School | 6,949 08 | 2,287 65 | 4,661 43 |
| Poultry | 25,849 93 | 16,263 93 | 9,586 00 |
| Horticulture | 27,924 51 | 1,878 64 | 26,045 87 |
| Apiculture | 4,949 50 | 242 80 | 4,706 70 |
| | $ 565,343 32 | $ 189,096 66 | $ 376,246 66 |

# Ontario Department of Agriculture

FORTY-FOURTH ANNUAL REPORT

OF THE

# AGRICULTURAL

AND

# EXPERIMENTAL UNION

# 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
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1923

# CONTENTS


PAGE

Officers for 1923 ..... 4

Treasurer's Report: A. W. Mason ..... 4

Annual Meeting ..... 5

Secretary's Report: W. J. Squirrell ..... 5

President's Address: J. W. Widdifield, M.P.P. ..... 7

Report on Co-operative Experiments in Field Husbandry for 1922, including tests of cereal grains, potatoes, roots and fodder crops, hay crops, etc.: W. J. Squirrell ..... 9

The European Corn Borer—Its Present Distribution in Ontario and the Outlook for the Future: L. Caesar ..... 24

Control Measures for the European Corn Borer: G. J. Spencer ..... 26

Summary of Co-operative Experiments in Weed Eradication to 1922: J. E. Howitt ..... 29

A Preliminary Weed Survey of the Province of Ontario: H. Groh ..... 32

Results of Co-operative Experiments in Agricultural Chemistry: S. Waterman ..... 39

Co-operative Handling of Bee Supplies: F. Eric Millen ..... 40

Results of Co-operative Experiments in Forestry: E. J. Zavitz ..... 42

Results of Experiments in Chicken Nutrition: W. R. Graham ..... 45

Prolificacy in Swine: Wade Toole ..... 47

The Rural Credits Act: G. A. Brodie ..... 50

To His Honour Henry Cockshutt,
*Lieutenant-Governor of the Province of Ontario.*

May it Please Your Honour:

I have the pleasure to present herewith for the consideration of your Honour the report of the Agricultural and Experimental Union for 1922.

Respectfully submitted,

Manning W. Doherty,
*Minister of Agriculture.*

Toronto, 1923

# Ontario Agricultural and Experimental Union

## OFFICERS FOR 1923.

*President*.....Jack Baker, Hampton, Ont.
*Vice-President*.....William Elliott, M.P., Galt, Ont.
*Secretary*.....C. A. Zavitz, Agricultural College, Guelph.
*Assistant Secretary*.....W. J. Squirrell, Agricultural College, Guelph.
*Treasurer*.....A. W. Mason, Agricultural College, Guelph.
*Directors*.....Pres. J. B. Reynolds, J. W. Widdifield, A. Shantz, W. H. Porter, M. W. Staples.
*Auditors*.....R. C. Moffatt and A. M. Porter.

## COMMITTEES ON CO-OPERATIVE EXPERIMENTAL WORK.

*Field Husbandry*.....C. A. Zavitz (Director), W. J. Squirrell, A. W. Mason, O. McConkey, A. E. Whiteside.
*Agricultural Botany*.....J. E. Howitt (Director), T. G. Raynor, Herbert Groh, W. J. Lennox.
*Forestry*.....E. J. Zavitz (Director), A. H. Tomlinson, H. A. Dorrance.
*Agricultural Chemistry*.....R. Harcourt (Director), S. Waterman, J. A. Neilson, A. H. MacLennan.
*Apiculture*.....F. E. Millen (Director), G. L. Jarvis, O. E. Cameron.
*Farm Literature*.....O. J. Stevenson (Director), W. C. Blackwood, R. E. Balch.
*Agricultural Physics*.....W. C. Blackwood (Director), R. R. Graham, R. C. Moffatt, F. L. Ferguson.
*Bacteriology*.....D. H. Jones (Director), T. H. Lund, A. Davey.
*Animal Husbandry*.....Wade Toole (Director), J. Steckley, R. G. Knox, G. E. Raithby.

## TREASURER'S REPORT, 1922.

| Receipts. | | Expenditures. | |
|---|---|---|---|
| Balance from 1921 | $1,654 38 | Agricultural Experiments | $1,696 45 |
| Government Grant | 2,750 00 | Agricultural Chemistry | 141 89 |
| Membership Fees, 246 at 50c | 123 00 | Agricultural Botany | 48 25 |
| Interest | 91 23 | Agricultural English | 15 17 |
| | | Expenses, Annual Meeting, 1922 | 161 60 |
| | | Meeting of Executive | 12 65 |
| | | Printing, Postage, etc., Annual Meeting, 1923 | 283 61 |
| | $4,618 61 | Total | $2,359 62 |
| | | Balance on hand | 2,258 99 |
| | | | $4,618 61 |

# Ontario Agricultural and Experimental Union

## ANNUAL MEETING

The forty-fourth annual meeting of the Ontario Agricultural and Experimental Union was held at the Ontario Agricultural College, Guelph, on Tuesday and Wednesday, January 9th and 10th, 1923. This meeting included, in all, six sessions.

The Tuesday evening session was held in the College Cafeteria in conjunction with the O. A. College Central Ontario Alumni, when Professor C. R. Fay of Toronto University and Cambridge, England, dealt with Consumer's Co-operation in Great Britain.

On Wednesday afternoon a joint meeting was held in the College Gymnasium with the Western Ontario Dairymen's Association and the Markets Conference.

At the final session on Wednesday evening, Dr. T. Macklin, of the University of Wisconsin, addressed a joint meeting with the Markets Conference on "Fundamental Principles of Co-operative Marketing."

The sessions were well attended and marked with live discussion and new interest.

## SECRETARY'S REPORT.

W. J. Squirrell, Agricultural College, Guelph.

Organized co-operation, which has been entirely voluntary on the part of the experimenters, has formed the fundamental working basis of the Experimental Union. For a period of thirty-seven years, this work, from a small beginning made in 1886, has been developing economically and substantially, and in the last decade it has supplied material to and received reports from a larger field of operators than any other organization of its kind on the continent. In the first year, twelve farmers volunteered to co-operate in the work, and this number has steadily increased until the organization in the past ten years shows an average annual number of 3,247 experimenters in Field Husbandry alone. A total of over 100,000 farmers have received material for co operative experiments in Field Husbandry since the organization of the work in 1886. In the first few years, the co-operative experiments were confined entirely to comparisons of varieties of farm crops and different manures and fertilizers. Other lines of agriculture have been added from time to time, until there are now nine separate committees on co-operative work, each committee consisting of a director and two, three, or four other members. A few of the recently conducted co-operative experiments are here referred to very briefly.

In co-operative experiments conducted for five years, excellent results have been obtained in the use of the (dry) formaldehyde treatment for the prevention of oat smut. This is a comparatively simple and inexpensive treatment, and one which is likely to come into general use. Prof. J. E. Howitt is the director on Agricultural Botany.

In 1921, crop tests were made with nitro-bacter soil vaccine, which has been widely advertised. Investigations so far show no special advantage has resulted from the use of this material. Prof. D. H. Jones is chairman of the Committee on Agricultural Bacteriology which is investigating this problem.

A very thorough study has been made of water supply and conveniences in the farm homes of Ontario by R. R. Graham of the Physics Department. A valuable paper on these subjects was presented at the last annual meeting by Mr. Graham, who is making furthe. investigations along these lines.

Dr. O. J. Stevenson's co-operative survey of farm literature has formed a basis on which to recommend plays, debates, etc., suitable for rural Ontario.

Definite methods of eradicating some of the worst weeds in Ontario have been formulated and tested out on numerous farms under the direction of the Experimental Union Committee in Agricultural Botany. The weeds which have received special attention so far have been: perennial sow thistle, bladder campion, wild mustard, twitch grass, and wild oats.

Valuable co-operative experiments are being conducted in re-forestation in some of the older sections of Ontario, and a report of this work will be presented by Prof. E. J. Zavitz, the director of this committee.

The leading varieties of grain crops in the co-operative experiments have been O.A.C. No. 21 barley, Guy Mayle Hulless barley, Wild Goose and Marquis spring wheat, O.A.C. No. 104 and Dawson's Golden Chaff winter wheat, O.A.C. No. 72 and O.A.C. No. 3 oats, O.A.C. No. 61 spring rye, Rye and Silver Hull buckwheat, and Pearce's Improved Tree beans.

The leading varieties among the root and potato crops in the co-operative experiments have been Yellow Leviathan mangels, Giant White Feeding Sugar mangels, Ne Plus Ultra swede turnips, Simmers' Improved Giant Short White carrots, and Irish Cobbler and Green Mountain potatoes.

Of the seven varieties of corn recommended by the Ontario Corn Growers' Association, the Golden Glow variety produced the highest yield of grain per acre in the co-operative experiments in the five of the seven years in which this experiment has been conducted.

The O.A.C. No. 181 variety of field peas, which was originated at the Ontario Agricultural College through hybridization, and which was distributed for co-operative experiments in the spring of 1921 for the first time, surpassed each of three other leading varieties in the average of the past two years by almost three bushels of grain per acre.

The standard seed mixture of oats and barley, consisting of one bushel of each by weight, has given a greater yield per acre in the co-operative experiments in the average of the past four years than when either Wild Goose wheat or Golden Vine peas were added to this seed mixture.

Northern grown seed potatoes have outyielded southern grown seed potatoes in the experiments of each of the last five years. The difference, however, does not seem to be great, if selected seed, comparatively free from disease, is obtainable from southern Ontario.

A number of co-operative experiments with fertilizers and manures on farm crops have been conducted. Commercial fertilizers have given more decided results with turnips, mangels, or potatoes, than with oats, winter wheat, or even corn.

The work of the Ontario Agricultural College and of the Experimental Union not only has exerted a marked influence in the betterment of agricultural conditions in Ontario, but this influence has widened to embrace the other provinces of Canada and even the states of the American Union.

## PRESIDENT'S ADDRESS.

J. W. Widdifield, M.P.P., Uxbridge.

It gives me pleasure this morning to welcome you to the Forty-fourth Annual Meeting of our Ontario Agricultural and Experimental Union, and it is a matter of congratulation that we are able to meet this year under particularly favourable auspices. Our fields were blessed this last season with a bountiful harvest, and while it is true that a market, responsive to crop conditions, will absolve the farmer from the charge of profiteering, it is also true that an abundant harvest is always a common blessing, for which our grateful acknowledgment is due.

The Union, in its varied activities through co-operative endeavour, has again added materially to its wealth of information, compiled from year to year, the value of which is patent to every observing farmer in the province. Best varieties for field and garden planting have been ear-marked, best methods of soil cultivation prescribed, fertilizers have been given their place relative to their adaptation to soil conditions and crop requirements, the Committee on Farm Home Convenience and Water Supply, with the assistance of the College Physics Department, has gathered for the homemaker a valuable fund of information on this important subject, the habits of some of our worst insect and weed pests have been studied with a view to their extermination or at least their control, and a survey of the community welfare field is also being made by a special committee, and its recommendations regarding community recreations, and community music, and farm literature, and the home beautiful, and a better rural community life generally, are already helping to make Ontario rural conditions more attractive, and are thus in no small measure discouraging the deprecated present-day exodus from the farm to the great urban centres.

In reviewing our past, we cannot but be pleased with what has been accomplished, but most of our work is before us. The field of our activities has been an ever widening one, and I think there yet are hitherto unexplored areas that might profitably be invaded. As retiring president, I am going to suggest for the Union a department for research work, in the strictly scientific sense of the term. We have been told that there is nothing new under the sun, but there are many old things that have never been really discovered, or at least explained, and the field of discovery lies before us. Nature's apparent jealousy in guarding her secrets is better explained by our own apathy in the matter. The simple truth revealed many years ago, as to the virtue of leguminous plants as gatherers of atmospheric nitrogen, with the joy of success in the discovery of the agency in the process, surely amply repaid for the labour of investigation, and the whole realm of nature is big with promise, the fulfilment only awaiting a diligent search for the truth. Why should not this advanced work be undertaken by an organization whose function is primarily experimentation, enquiry, and investigation? Having available the laboratories of the Ontario Agricultural College, one of the greatest natural science institutions under the sun, and presuming, under a perfect warrant, on the practical sympathy of the Provincial Department, a great deal might be accomplished in the interests of scientific agriculture.

We are pleased to have in joint session with us this week, working co-operatively with us in the interests of successful agriculture, the lately organized Markets' Conference, and the Western Ontario Dairymen's Association, and perhaps, in our common programme, the most outstanding question to be considered will be that of Co-operative Marketing. A year ago this question

prominently featured the discussions at our Union meeting, and again it promises to be an exceedingly interesting topic in this year's programme. In his tour of Ontario this last season, Aaron Sapiro, the great Californian apostle of co-operative marketing on the commodity basis, and who has been instrumental in organizing many Pacific Coast companies for successful operation, told us that nearly every civilized country in the world has had co-operative marketing for farmers for two generations, and that the United States and Canada were the only laggards. We are pleased to know that steps are already being taken by our Department of Agriculture to remove this stigma from Ontario at least. We will have with us at these sesssions other men who are competent like Mr. Sapiro to speak to us from first-hand knowledge of this branch of farm economics, and we hope for a live discussion of this very important subject. Again, the apparently universal applicability of the principle of co-operation as it applies to rural credits will receive consideration, and the recent legislation in this respect will be discussed by a member of the Agricultural Development Board.

The exceedingly interesting and thoroughly practical nature of our programme must appeal to all present, and we trust that you will all, by entering heartily into the discussion, assist in making this the best and most profitable meeting in the history of our Union.

I cannot close without a word of tribute to one who has almost invariably, with his counsel and advice, been present at our meetings but is not with us this morning. I refer to Dr. Zavitz, whose indisposition is known to you, and with regard to whom any word or tribute or praise will, I am sure, touch a responsive chord in the hearts of all present. Dr. Zavitz' interest has ever been inseparably linked up with the life history thus far of the Ontario Agricultural College and the Experimental Union, and his valuable work in the interests of advanced agriculture (I venture the opinion that no man has done more) is known and appreciated in agricultural circles everywhere. His integrity, his unswerving loyalty to duty, and his outstanding personality, have commanded the respect of everybody, and to all who have had the privilege of a near acquaintance with him, personal contact has always meant the closest personal friendship. I am sure I voice the sentiment of not only all present but of a sympathetic province, when for Dr. Zavitz a sincere wish is expressed for a speedy and complete recovery.

Mr. Robertson: Since 1892 the Experimental Union has been linked up with the name of Dr. C. A. Zavitz, and we regret very much he is not here with us. I think it is only right that we, as ex-students, should express to him our sorrow that he is not with us and that we hope for his speedy recovery and wish to thank him for his sincere good wishes for the success of these meetings.

T. H. Mason: It hardly seems like an Experimental Union without Dr. Zavitz being here.

Hon. Nelson Monteith: I have been associated with the Experimental Union for many years and feel that this motion is timely. It is the first time in my remembrance that Dr. Zavitz has been absent from one of these meetings. I have great pleasure in supporting that motion.

Mr. Raynor: I was here ahead of Dr. Zavitz one year. The Experimental Union was organized a little ahead of him, but its existence is due to Dr. Zavitz.

Moved by G. A. Robertson, seconded by T. H. Mason, and carried unanimously:

"That we acknowledge the kind wishes for the success of our Annual Meeting of the Experimental Union as expressed in the letter received from Dr. C. A. Zavitz. That his presence has been greatly missed by us. We are pleased to hear of his progress, and hope for his speedy recovery and return."

Mr. J. Baker: We all know the advantages of this organization to the farmers of Ontario; it cannot be estimated in dollars and cents. I think that our Agricultural Societies and Farmers' Clubs, etc., should act more and more as mediums for broadcasting the results of these experiments.

My personal connection with the Farmers' Club in our locality has afforded me the advantage of discussing the reports sent out by the Experimental Union.

The weed problem has come to be a very difficult problem with the farmer, owing to the scarcity of labour during the last few years. Perhaps the Ontario farmer will have to return, partially at least, to the old system of summer fallowing in order to control the weed pest.

In the President's address, he mentioned improvements with respect to farm home conveniences, e.g., heating, water supply, community welfare, etc. I think it is a splendid development of the Experimental Union to branch out in these new departments of endeavour. It is true that there has been a great exodus from the farms, and, if something can be done in this connection to make home life on the farm more attractive, I am sure it would be a good thing.

With regard to the research work which our President has mentioned, it is a very good idea and a suggestion that the Experimental Union should take up.

You will hear a good deal about co-operative marketing; perhaps some of the co-operative marketing associations have not met with the success that might be expected, but we believe that it is the proper system for the farmers of Ontario.

Then, this system of co-operative rural credits is a good move to assist the farmers who have been handicapped by lack of capital. The farmer is still "on the job," and although returns have been disappointing in the last year or two, we can count on the farmer to be there. While he may have a rather pessimistic viewpoint at present, I think that with his inherent plebeian honesty and his tenacity of purpose, he can be depended upon, and he should receive all the help he can from the Ontario Agricultural and Experimental Union to bring Ontario agriculture into its own.

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## REPORT OF CO-OPERATIVE EXPERIMENTS IN FIELD HUSBANDRY FOR 1922, INCLUDING TESTS OF CEREAL GRAINS, POTATOES, ROOTS AND FODDER CROPS, HAY CROPS, ETC.

W. J. Squirrell, Associate Professor in Field Husbandry, O.A.C., Guelph.

In 1922 the committee in Co-operative Experiments in Field Husbandry was as follows: C. A. Zavitz (Director), W. J. Squirrell, A. W. Mason, C. R. Klinck, and A. E. Whiteside. The co-operative experiments in field husbandry was started in 1886 in a small way, and this work has been continuous since that time. The number of experimenters in one single year has been slightly over five thousand.

In the autumn of 1921 material was sent out for seven, and in the spring of 1922 for thirty-six, making in all forty-three distinct and separate experiments within the past year. Definite instructions for carrying on the work were furnished with each of the forty-three experiments. Information regarding the two sets of experiments as sent out to prospective experimenters, to the agricultural journals, and to the newspapers of Ontario was in the following form:—

## Winter Crops, 1921-1922.

Material for any one of the seven experiments here mentioned will be sent free to any Ontario farmer applying for it, if he will conduct an experiment with great care and report the results after harvest next year. The seed will be sent out in the order in which applications are received as long as the supply lasts.

1.—Testing three leading varieties of Winter Wheat..... 3 plots
2.—Testing one leading variety of Winter Rye and one of Winter Wheat..... 2 "
3.—Testing spring applications of five fertilizers with Winter Wheat..... 6 "
4.—Testing Autumn and Spring Applications of Nitrate of Soda and Common Salt with Winter Wheat..... 5 "
5.—Testing Winter Emmer and Winter Barley..... 2 "
6.—Testing Hairy Vetches and Winter Rye as Fodder Crops..... 2 "
7.—Testing mixtures of Hairy Vetches and Winter Rye for Seed Production..... 3 "

The exact size of each plot is to be one rod wide by two rods long. The material for Experiments Nos. 1, 2, 3, 5, 6 and 7 will be forwarded by mail, and for the other one by express. Each person wishing to conduct one of these experiments should apply as soon as possible, mentioning which test he desires, and the material, with instructions for testing and the blank form on which to report, will be furnished free of cost until the supply of experimental material is exhausted.

## Spring Crops, 1922.

The members of the Ontario Agricultural and Experimental Union are pleased to state that for 1922 they are prepared to distribute into every township in Ontario, material for experiments with fodder crops, roots, grains, grasses, clovers and fertilizers. Fully 2,500 varieties of farm crops have been tested in the Experimental Department of the Ontario Agricultural College, Guelph, for at least five years. These consist of nearly all the Canadian sorts, and several hundred new varieties and new strains, a few of which have done exceedingly well in the carefully conducted experiments at the College, and will be used for the co-operative experiments throughout Ontario in 1922.

Each person in Ontario who wishes to join in the work may choose any one of the experiments for 1922, fill out the accompanying form of application, and return the same to the Director of the Co-operative Experiments in Agriculture at as early a date as possible. The material will be furnished in the order in which the applications are received, until the supply is exhausted. A sheet containing the instructions for conducting the chosen experiment, and the blank form on which to report the results of the work, will be sent to each experimenter at the time the fertilizers or seeds are forwarded. All material will be furnished entirely free of charge to each applicant, and the produce of the plots will, of course, become the property of the person who conducts the experiment. In return, the Committee on Agricultural Experiments desires to ask that each experimenter will sow all the plots belonging to the particular experiment which he has chosen for 1922, and that he will be very careful and accurate in his work and forward to the Director a complete report of the results obtained from the test, as soon as possible after the plots are harvested.

All seeds and fertilizers will be sent in good time for spring seeding, providing the applications are received at an early date. The supply of material being limited, those who apply first will be sure of obtaining the desired complement. Each applicant should make a second choice, for fear the first could not be granted. The experiment selected should be indicated by using its number as given in the left hand column in the list of experiments. Further information is given on the application form which is attached.

## LIST OF EXPERIMENTS FOR 1922.

### Grain Crops.

| | Plots |
|---|---|
| 1—Testing two varieties of Oats | 2 |
| 2—Testing O.A.C. No 21 Barley and Emmer | 2 |
| 3—Testing two varieties of Hulless Barley | 2 |
| 4—Testing two varieties of Spring Wheat | 2 |
| 5—Testing two varieties of Buckwheat | 2 |
| 6—Testing three varieties of Field Peas | 3 |
| 7—Testing two varieties of Spring Rye | 2 |
| 8—Testing three varieties of Soy, Soja, or Japanese Beans | 3 |
| 9—Testing eight varieties of Flint and Dent Husking Corn | 8 |

### Roots Crops.

| | |
|---|---|
| 10—Testing three varieties of Mangels | 3 |
| 11—Testing two varieties of Sugar Mangels | 2 |
| 12—Testing three varieties of Swedish Turnips | 3 |
| 13—Testing two varieties of Fall Turnips | 2 |
| 14—Testing two varieties of Carrots | 2 |

### Forage, Fodder, Silage and Hay Crops.

| | |
|---|---|
| 15—Testing the planting of Corn at six distances in the row | 3 |
| 16—Testing Sudan Grass and two varieties of Millet | 3 |
| 17—Testing Sunflower, Sorghum and Corn for fodder | 3 |
| 18—Testing Grass Peas and two varieties of Vetches | 3 |
| 19—Testing Rape, Kale and Field Cabbage | 2 |
| 20—Testing two varieties of Biennial White Sweet Clover | 2 |
| 21—Testing two varieties of Alfalfa | 3 |
| 22—Testing unhulled, hulled and scarified Sweet Clover Seed | 6 |

### Culinary Crops.

| | |
|---|---|
| 23—Testing three varieties of Field Beans | 3 |
| 24—Testing Sweet Corn for table use from different dates of planting | 3 |

### Fertilizer Experiments.

| | |
|---|---|
| 25A—Testing Low and High Grade Fertilizers and Manure with Oats and Red Clover | 4 |
| 25B—Testing Low and High Grade Fertilizers and Manure with Oats and Biennial White Sweet Clover | 4 |
| 26—Testing different quantities of Lime with Sweet Clover | 4 |

### Miscellaneous Experiments.

| | |
|---|---|
| 27—Testing Northern and Southern Grown Seed Potatoes | 2 |
| 28—Testing two varieties of Potatoes | 2 |
| 29—Testing three grain mixtures for Grain production | 3 |
| 30—Testing three grain mixtures for Fodder production | 3 |
| 31—Testing Hubam Sweet Clover at the rate of one pound and four pounds per acre in rows for seed production | 2 |
| 32—Testing Hubam Sweet Clover when cut at three different stages of growth for green fodder and for Hay | 3 |
| 33—Testing two varieties of Hubam Sweet Clover for green fodder and for Hay | 2 |
| 34—Testing Hubam, Biennial White, and Biennial Yellow Sweet Clover for green fodder and for Hay | 3 |
| 35—Testing Hubam, Biennial White and Biennial Yellow Sweet Clover by sowing alone in late June or early July for cover crops | 3 |

The size of each plot is to be two rods long by one rod wide except for numbers 27 and 28 which is to be one rod square. For Experiment number 26, the Experimental Union will furnish the Sweet Clover seed and the experimenter the lime as required.

If you wish to conduct one of the 36 agricultural experiments named on the accompanying circular, kindly fill out this blank form and return it as soon as possible.

The distribution will be confined to the choice varieties included in the various experiments. In filling out the blank form, therefore, it is neither necessary nor advisable to mention any particular variety or varieties.

All materials for experiments with instruction sheets enclosed will be sent by parcel post.

Address all communications to,

C. A. Zavitz, Agricultural College, Guelph, Ont.

Application for Material for an Experiment.

I would like to conduct experiment number....., but if all the material for that experiment has been applied for before my application is received I select experiment number....., as my second choice. If this material for one of these experiments is forwarded to me, I will endeavor to

1. Carry on the test according to the instructions received with the seed;
2. Exercise care and accuracy in work; and
3. Report the result of the experiment as soon as possible after harvest, whether successful or not.

## Weather Conditions.

The total amount of precipitation for each of the six growing months from April to September for 1922 and for the average of the past twenty-three years, as determined in the Department of Physics at the Ontario Agricultural College, is given as follows:—

| Period | April | May | June | July | Aug. | Sept. | Total |
|---|---|---|---|---|---|---|---|
| | inches | inches | inches | inches | inches | inches | inches |
| 1922 (1 year)..... | 4.76 | 2.95 | 4.66 | 2.52 | 2.22 | 3.15 | 20.26 |
| 1900-1922 (23 Years)..... | 2.62 | 2.93 | 2.81 | 3.54 | 2.92 | 2.52 | 17.34 |

It will be seen that the amount of rainfall in each of the months of April, June and September in 1922 was comparatively large, and that for July and August was light. The total amount of rainfall for the six months here mentioned in 1922 was 2.92 inches above the average of the past twenty-three years. This increased amount was made up largely by the rainfalls in the months of April and June.

The August bulletin of the Statistics and Publications Branch of the Ontario Department of Agriculture reports that the rainfall throughout Ontario for the five months, from March to July inclusive, was 14.99 inches or 1.95 inches above the normal of the average of the last forty years. April and June were in excess, while March and May were below their respective averages.

## Results of Co-operative Experiments.

The co-operative experimental work with farm crops has been entirely voluntary on the part of the experimenters. These tests were conducted by the farmers themselves through the helpful co-operation and guidance of the Field Husbandry Committee of the Experimental Union. Voluntary co-operation has been the secret and has made the success of this work.

The reports of the co-operative experiments for 1922 which were received at the College were submitted to the same critical examination as in former years. For the summary report which is here presented, only those individual reports which showed carefulness and reliability in all the essential details of the work were used. Any of those at this meeting who wish to do so may examine these reports as they are all here on the table whether they represent the successfully or the unsuccessfully conducted tests. We have now many experienced experimenters engaged in this work. These men combine extensive practical

experience on the farm, a good education, and a substantial training in experimental work as they have conducted successful tests on their own farms in each of a number of years. Many of the reports not included in the summary, owing to a slight change in the size of the plots or to some unavoidable accident, have exerted a valuable individual influence in furnishing an object lesson to the experimenters and to others, and in supplying good, pure seed of better varieties than were grown on the farm previously.

## Grain Crops

The following gives the summary results in tabulated form of the varieties of grain crops tested throughout Ontario in 1922:—

| Experiments | Varieties | Yield per acre. | | |
|---|---|---|---|---|
| | | Straw (tons) | Grain (bush.) | Grain (lbs.) |
| Oats (23 tests) | O.A.C. No. 72 | 1.94 | 47.74 | 1623 |
| | O.A.C. No. 3 | 1.40 | 42.69 | 1451 |
| | Liberty (Hulless) | 1.89 | 38.68 | 1315 |
| Six-rowed Barley and Emmer (11 tests) | O.A.C. No. 21 | 1.17 | 37.27 | 1789 |
| | Common Emmer | 1.49 | 30.00 | 1440 |
| Hulless Barley (9 tests) | Guy Mayle | 1.30 | 15.33 | 920 |
| | Black Hulless | 1.33 | 14.81 | 889 |
| Spring Wheat (5 tests) | Marquis | .... | 24.00 | 1440 |
| | Wild Goose | .... | 23.53 | 1412 |
| Winter Wheat (11 tests) | O.A.C. No. 104 | 1.78 | 30.96 | 1858 |
| | Kharkov | 1.79 | 28.92 | 1735 |
| | Improved Dawson's Golden Chaff | 1.57 | 28.79 | 1727 |
| | Improved Imperial Amber | 1.66 | 26.69 | 1601 |
| | Yaroslaf | 1.86 | 25.59 | 1535 |
| Winter Rye and Winter Wheat (3 tests) | Winter Rye | 3.03 | 41.12 | 2303 |
| | Winter Wheat | 2.03 | 33.55 | 2013 |
| Buckwheat (2 tests) | Rye or Rough | 2.35 | 36.01 | 1728 |
| | Silver Hull | 2.74 | 22.03 | 1057 |
| Field Peas (36 tests) | O.A.C. No. 181 | 1.05 | 27.49 | 1649 |
| | Early Britain | .81 | 26.10 | 1566 |
| | Potter | 1.08 | 26.10 | 1566 |
| | Canadian Beauty | 1.23 | 24.36 | 1462 |
| Field Beans (5 tests) | Pearce's Improved Tree | .69 | 25.60 | 1536 |
| | Michigan No. 630425 | .49 | 20.44 | 1226 |
| | American Wonder | .49 | 20.20 | 1212 |

In the first column of figures, the yield of straw per acre represents the total crop less the amount of grain and therefore includes the chaff with the straw. In the second column, the yield of grain per acre is given in bushels and, in the third column, in pounds per acre. This makes possible a comparison between the different classes of grains where there is a difference in the standard weights per measured bushel.

*Varieties of Oats*; Three varieties of oats were used in the co-operative experiments in 1922. The O.A.C. No. 72 and the O.A.C. No. 3 have been used in each of the past ten years and the Liberty oat, a new hulless variety originated by Dr. C. E. Saunders, Central Experimental Farm, Ottawa, was used in the co-operative tests for the second time. The Liberty hulless oat has given better results than any other variety of hulless oats which we have tested at the College.

The tabulated results in 1922 show that the Liberty oat gave 1,315 pounds per acre in comparison with 1,623 pounds for the O.A.C. No. 72. In the average results of the past two years, the O.A.C. No. 72 surpassed the Liberty variety by 374 pounds per acre.

The following table gives the average yield per acre of all the co-operative tests made with the O.A.C. No. 72 and the O.A.C. No. 3 varieties of oats in each of the past ten years, also the average results of 667 successfully conducted tests made throughout the Province for the ten-year period:—

| Varieties | Average Yield of Oats per Acre. (Bushels by Weight) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 | Average 10 years |
| O.A.C.No. 72 | 52.1 | 52.4 | 52.9 | 47.0 | 45.9 | 54.2 | 41.5 | 50.5 | 41.0 | 47.7 | 48.5 |
| O.A.C.No. 3 | 43.3 | 49.0 | 49.1 | 45.6 | 41.2 | 46.1 | 38.9 | 41.6 | 39.2 | 42.7 | 43.7 |

In every single year of the ten in which this experiment was conducted, the O.A.C. No. 72 variety surpassed the O.A.C. No. 3 variety of oats in yield of grain per acre. The average increase per annum for the whole period being 4.8 bushels per acre in favour of the O.A.C. No. 72. The O.A.C. No. 3 variety is about ten days earlier in maturing than the O.A.C. No. 72 or the Banner. There is no variety of oats grown as a field crop in Ontario which is thinner in the hull than the O.A.C. No. 3.

The two most extensively grown varieties in Ontario at the present time are the O.A.C. No. 72 and the Banner. The O.A.C. No. 3 and the Daubeney are the two most widely grown of the early-maturing varieties.

The following table gives the average of sixteen years' results of these four varieties of oats as tested in the experimental grounds of the Ontario Agricultural College:—

| Varieties | Days to Mature | Percentage of Hull | Yield per Acre | |
|---|---|---|---|---|
| | | | Straw (tons) | Grain (bush.) |
| O.A.C. No. 72 | 110 | 28.5 | 2.17 | 83.23 |
| O.A.C. No. 3 | 100 | 24.1 | 1.88 | 82.73 |
| Banner | 110 | 30.3 | 2.10 | 73.58 |
| Daubeney | 102 | 25.2 | 1.88 | 72.16 |

It is interesting to note that the grain of the O.A.C. No. 72 variety won the sweepstakes prize at the Provincial Winter Fair at Guelph in six of the last seven years.

*O.A.C. No. 21 Barley and Common Emmer.* The O.A.C. No. 21 barley is the chief variety of barley grown in the Province of Ontario and it is now grown to the exclusion of practically all other varieties. This variety is also extensively grown in Western Canada. Common Emmer, which has been widely advertised, has proven to be a large yielder of grain. In experiments at the College, it has shown itself to be a strong competitor with the leading varieties of barley and

the leading varieties of oats in grain production. The O.A.C. No. 21 barley surpassed the Common Emmer by an average yield of 349 pounds of grain per acre in 1922. As these two grains have been used in the co-operative experiments in each of the last ten years, during which time there were 129 successfully conducted tests, it was found that the average yield of grain per acre was 1,615 pounds for the O.A.C. No. 21 barley and 1,358 pounds for the Common Emmer. Barley, therefore, outyielded Emmer in the average of the whole ten-year period by 257 pounds per acre.

*Hulless Barley.* In the co-operative experiments throughout Ontario, the Guy Mayle variety of hulless barley surpassed the Black Hulless variety in the average yield of grain per acre by .5 bushels in 1922 and by less than one-half bushel in the average of the past nineteen years. While there is not much difference between these two varieties in yield per acre, the Guy Mayle variety is the more popular of the two with the experimenters. It is a little stiffer in the straw than the Black Hulless variety. Farmers who wish to grow hulless barley might to advantage use the Guy Mayle variety.

*Spring Wheat.* The Marquis variety of spring wheat surpassed the Wild Goose variety in yield of grain per acre in 1922 by less than one-third of a bushel per acre. In the average of the past ten years in which this co-operative experiment has included these two varieties, successfully conducted tests have been made on 131 Ontario farms. In the average of this ten-year period, the Wild Goose variety has given a yield of 20.4 and the Marquis of 18.8 bushels per acre. The Marquis in Ontario, as in Western Canada, has proven itself to be one of the best of the flour spring wheats. The Wild Goose is one of the best of the macaroni species of wheat.

*Winter Wheat.* Five varieties of winter wheat were included in the co-operative test in 1922. The O.A.C. No. 104 variety outyielded the Improved Dawson's Golden Chaff in 1922 by a little over 2 bushels per acre. In the average of six years' tests in which there were 128 successfully conducted experiments, the O.A.C. No. 104 yielded 27.7 and the Improved Dawson's Golden Chaff 26.5 bushels per acre. These were followed by the Imperial Amber, 25.6 ; Kharkov, 23.2; and Yaroslaf, 21.8 bushels per acre.

The O.A.C. No. 104 was originated at the Ontario Agricultural College by crossing the Dawson's Golden Chaff and the Bulgarian varieties. It is a white wheat possessing white chaff similar to the Bulgarian and has a beardless head similar to the Dawson's Golden Chaff. In the field plot experiments at the College and in the co-operative experiments conducted throughout Ontario, it has proven to be an excellent yielder and less subject to winter killing than the Dawson's Golden Chaff.

*Winter Rye and Winter Wheat.* In each of the last seven years, one of the best varieties of winter rye and one of the best varieties of winter wheat have been compared with each other for productiveness in the co-operative experiments. In 1920, 1921, and 1922 the Rosen rye and the O.A.C. No. 104 winter wheat were the crops compared and in the years 1915, 1916, 1918, and 1919 the Petkus rye and the Imperial Amber winter wheat were the varieties included in this test. In the average results in pounds of grain per acre, it was found that the winter rye gave a greater yield than the winter wheat by 290 pounds in 1922, and by 347 pounds per acre in the average of seven years. Without a single exception, the winter rye surpassed the winter wheat each year in yield of grain. In the experiments at the College conducted over a long period of time, varieties of winter rye have proven to be more hardy than the very hardiest of the winter wheat varieties.

*Buckwheat.* In each of eleven years, two varieties of buckwheat have been included in the co-operative tests. The Rye buckwheat surpassed the Silver Hull variety in 1922 by an average of 14 bushels and in the average of the eleven-year period by 8.2 bushels per acre. The Rye buckwheat, which is largely grown in the Maritime Provinces, has proven itself, in the co-operative experiments over Ontario, to be a much larger yielder of grain than the Silver Hull variety. The straw, although finer in texture, is usually slightly less in quantity than the Silver Hull variety. The grain of the Rye buckwheat is rough, the hull somewhat thicker than is found in the Silver Hull variety, and it produces flour with a yellowish tinge.

*Field Peas.* For seven years in succession, the same three varieties of peas have been used in the co-operative experiments. The average for the seven-year period shows an annual yield of grain per acre of 24.3 bushels for the Potter and the Early Britain, and of 23.4 bushels for the Canadian Beauty. In 1921 and 1922, the O.A.C. No. 181 was included in the co-operative tests. The tabulated results show that this new variety surpassed the Potter by 1⅓ bushels per acre in 1922 and in the average of the two years by 2.6 bushels per acre. This new variety of peas was originated at the College through hybridization.

*Field Beans.* Three varieties of field beans were included in the co-operative tests in 1922. The Pearce's Improved Tree bean gave an average yield of 5.2 bushels per acre more than the Michigan No. 630425. The Michigan No. 630425 slightly outyielded the American Wonder variety. The Pearce's Improved Tree bean is a larger strawed and later maturing variety than the Pea bean. In those localities where it can be successfully matured, it is a large yielder of beans of excellent quality.

## Grains Grown in Combination for Grain Production.

A number of experiments have been conducted at the Ontario Agricultural College during the last twenty-three years in growing grains in different combinations for grain production. In 1922, the only cereal crops which occupied a greater area of land than mixed grains in Ontario were oats and winter wheat. It will, therefore, be seen that growing grains in mixtures occupies an important place in crop production in the Province of Ontario.

For six years in succession, an experiment was conducted at the Ontario Agricultural College by growing oats, barley, spring wheat and peas separately and in different combinations for the production of grain. There were six mixtures having two classes of grain; four, having three classes; and one, having four classes of grain in combination. This made in all eleven mixtures besides the four grains grown separately, forming a total of fifteen plots. The experiment was conducted in duplicate each year for six years, making a total of 180 plots. Of all the mixtures used, barley and oats gave the highest returns, this combination producing 193 pounds of threshed grain per acre more than the highest yielding grain grown alone.

Some farmers have been under the impression that if a comparatively small quantity of rye, goose wheat, peas or flax was added to a mixture of oats and barley, they would receive in the resultant crop not only as large a yield of oats and barley as if these two grains had been grown without any additional seed, but that they also would obtain a fair yield of rye, goose wheat, peas or of flax in addition. Results of many experiments at the College have shown that this has not been the case and that so far no additional grain of any kind

has been used with a standard mixture of barley and oats which has not caused an actual reduction in the total yield of grain per acre.

In the spring of 1918, a co-operative experiment was started in order to ascertain whether an addition of one-half bushel of Goose Wheat or one-half bushel of Golden Vine peas to a mixture of one bushel of oats and one bushel of barley would be of any advantage in giving a larger yield throughout Ontario. No results of successfully conducted co-operative experiments were obtained in that year. The following table gives the average results of similar experiments, as herein described, conducted over Ontario in each of the past four years:—

| Mixtures | Yield of Straw per Acre (tons) | | | | | Yield of Grain per Acre (pounds) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1919 | 1920 | 1921 | 1922 | Ave. | 1919 | 1920 | 1921 | 1922 | Ave. |
| Oats 1 bus., Barley 1 bus... | 1.24 | 1.70 | 1.35 | 2.09 | 1.60 | 1,473 | 2.240 | 1,223 | 3,446 | 2,096 |
| Oats 1 bus., Barley 1 bus., Golden Vine Peas, ½ bus... | 1.16 | 1.77 | 1.36 | 2.42 | 1.68 | 1,310 | 2,148 | 1,062 | 3,563 | 2,021 |
| Oats 1 bus., Barley 1 bus., Goose Wheat, ½ bus..... | 1.21 | 1.71 | 1.35 | 2.27 | 1.64 | 1,398 | 1.993 | 1.121 | 3,211 | 1,931 |

The tabulated results show that oats and barley grown in combination without any additional grain produced a greater yield of grain per acre than when either Golden Vine peas or Goose Wheat was added to this mixture. These results have proven to be quite consistent with those obtained at the College through more complicated experiments extending over a much longer period of time. When a high yielding variety of oats and a high yielding variety of barley are sown at the rate of one bushel (34 pounds) of the former and one bushel (48 pounds) of the latter or a total of 82 pounds of the mixture per acre, a high yield may be expected. It is necessary, of course, that the varieties used reach maturity at the same time. A mixture of O.A.C. No. 21 barley (48 pounds per acre) and O.A C. No. 3 oats (34 pounds per acre) is one that so far has not been surpassed in yield in Ontario.

## Varieties of Corn for Husking.

| Varieties | Average Yield per Acre | | | |
|---|---|---|---|---|
| | Whole Crop (tons) | | Grain (bushels.) | |
| | 1922 | Average 7 years 42 tests | 1922 | Average 7 years 29 tests |
| Golden Glow | 6.76 | 9.90 | 58.57 | 70.06 |
| White Cap Yellow Dent | 9.30 | 9.78 | 63.14 | 64.33 |
| Wisconsin No. 7 | 10.56 | 10.94 | 62.86 | 63.10 |
| Bailey | 9.53 | 9.80 | 64.29 | 63.09 |
| Salzer's North Dakota | 10.81 | 9.30 | 62.00 | 58.65 |
| Longfellow | 8.02 | 9.30 | 47.57 | 58.22 |
| Compton's Early | 7.29 | 8.52 | 42.00 | 53.68 |

Two separate tests of corn experiments were used in the co-operative tests previous to 1916. Each set consisted of a small number of varieties. One set was used for grain production and the other was studied from the standpoint of fodder. In 1916, a co-operative experiment was started in the testing of the seven varieties of corn recommended for growing in Ontario by the Ontario Corn Growers' Association. This experiment has now been conducted for seven years and includes in all 42 separate tests of the whole crop and 29 of the shelled grain. The foregoing table gives the average yield of total crop and of grain per acre of each of the seven varieties of corn tested in Ontario in 1922 and in the average of the past seven years.

The Golden Glow variety gave the highest yield of grain per acre in five out of seven years. This variety has not only proven to be a large yielder of grain per acre but ranks second in yield of whole crop in the average of the seven-year period being only surpassed in this respect by the Wisconsin No. 7 variety. The four varieties producing the highest average yields of grain per acre are Dents and the three varieties which have given the lowest yields are Flints. It will be observed that in 1922 the yields of grain per acre for the seven varieties tested was somewhat below the average of the seven-year period.

## Field Roots and Fodder Crops.

The co-operative experiments were conducted in 1922 with mangels; sugar mangels or stock feeding sugar beets; swede turnips; fall turnips; carrots; grass peas and hairy vetches; sunflowers, sorghum and field corn; and millet. There were thirty good reports of successfully conducted tests with field roots and fodder crops in the past year including six for mangels; four for sugar mangels; five for swede turnips; four for carrots; two for grass peas and hairy vetches; three for sunflowers, sorghum and field corn; and three for millet.

The average results of successfully conducted tests with field roots and fodder crops are presented in the following table:—

| Experiments | Varieties | Yield per Acre (tons) |
|---|---|---|
| Mangels | O.A.C. No. 2 Strain Yellow Leviathan | 34.17 |
| | Keith's Prize Taker Yellow Globe | 30.59 |
| | Sutton's Mammoth Long Red | 29.38 |
| Sugar Mangels | Bruce's Giant White Feeding | 35.70 |
| | White Silesian | 34.15 |
| Swede Turnips | Ne Plus Ultra | 31.22 |
| | Garton's Superlative | 30.69 |
| | Good Luck | 27.74 |
| Carrots | Simmers' Improved Giant Short White | 26.02 |
| | Rennie's Mammoth Short White | 23.60 |
| Grass Peas and Hairy Vetches | Hairy Vetches | 6.70 |
| | Grass Peas | 4.02 |
| Sunflowers, Sorghum, and Field Corn | Sunflowers | 16.52 |
| | Corn | 14.66 |
| | Sorghum | 10.05 |
| Millets | Japanese Panicle | 6.93 |
| | O.A.C. No. 71 | 6.29 |
| | Sudan Grass | 5.97 |

*Varieties of Mangels.* The three varieties of mangels tested in 1922 were also used in the co-operative experiments in the three years previous. In the average of twenty-nine tests conducted in the last four years, these varieties yielded as follows: Sutton's Mammoth Long Red 31.5, Yellow Leviathan 31.0, and Keith's Prize Taker 29.3 tons per acre. The first two varieties included in the above table have been used in the co-operative tests for several years, in the majority of these the Yellow Leviathan has surpassed the Sutton's Mammoth Long Red.

*Sugar Mangels.* The names, sugar mangels and sugar beets for feeding purposes, refer to the same class of roots which are intermediate between mangels and the true sugar beets. Mangels usually have about five per cent., sugar mangels rarely exceed ten per cent. and sugar beets have from fourteen to twenty per cent. of sugar. Sugar mangels have a larger per cent. of the root growing above the ground than sugar beets and are more easily harvested. In the co-operative experiments for three years, the White Silesian variety and the Bruce's Giant White Feeding have each given an average yield of 27.0 tons per acre.

*Swede Turnips.* In the average of the successfully conducted co-operative experiments for the past two years, the Ne Plus Ultra has produced 29.7, the Good Luck 28.8 and the Garton's Superlative 27.5 tons of roots per acre. The three varieties of swede turnips included in this test, in addition to being good yielders, have also proven to be good shippers.

*Field Carrots.* The Simmers' Improved Giant Short White surpassed Rennie's Mammoth Short White in 1922 by 2.4 tons per acre, and in the average of the last three years by .4 tons per acre. The intermediate white field carrots offered by the different seedsmen under different names usually resemble each other very closely in appearance, and there appears to be more difference in the quality of the seed than in the so-called varieties.

*Grass Peas and Hairy Vetches.* Two successfully conducted co-operative reports were received in 1922 when the Hairy Vetches produced an average yield of 6.7 tons and the Grass Peas 4.0 tons per acre. In the average of the last five years in which successful reports were received, Hairy Vetches gave an average of 10.2 tons and Grass Peas of 8.9 tons per acre.

*Sunflowers, Sorghum and Field Corn.* Mammoth Russian sunflowers, Early Amber Sugar sorghum and White Cap Yellow Dent corn were distributed for co-operative experiments in 1921 and 1922. In the average of these two years, seven successfully conducted reports were received giving average yields of 17.8 tons for the Mammoth Russian sunflowers, 13.0 tons for the White Cap Yellow Dent corn, and 8.5 tons of green fodder per acre for the Early Amber Sugar sorghum.

*Millets.* In 1922, the Japanese Panicle millet surpassed the O A.C. No. 71 millet by .6 tons and the Sudan Grass by 1 ton per acre in the average of three successfully conducted experiments. These three varieties have now been under test for three years and in the average of this period the Japanese Panicle millet produced 8.0 tons, the O.A.C. No. 71 millet 8.0 tons, and the Sudan Grass 5.2 tons of green fodder per acre.

## Dates of Planting Sweet Corn.

More than fifty varieties of sweet corn have been tested at the College, and a few of the best of these have been included in the co-operative tests. The varieties which have been used most extensively in these experiments have been Golden Bantam, Stowell's Evergreen, White Cory and Malakhoff.

In each of the years in which it was tested, the Golden Bantam variety was reported by the experimenters as being the most desirable to grow for home use. In each of six years, previous to 1920, only two varieties were selected for distribution, namely, the Golden Bantam of the early and the Stowell's Evergreen of the late. The Golden Bantam proved more popular with the experimenters, and produced a greater number of ears of corn of better quality than the Stowell's Evergreen variety. The former variety was about ten days earlier than the latter. The Golden Bantam variety is now very widely grown throughout Ontario. In each of the past three years, a co-operative experiment has been conducted in planting the Golden Bantam sweet corn on three different dates. The seed was supplied by the College and each experimenter was advised to plant the corn on three different dates, allowing two weeks to remain between each two dates of planting. The following gives the average results of nine co-operative experiments in 1920, of fifteen in 1921, and of nine in 1922:—

| Dates | | | | | | Number of Good Ears from 50 hills. | | |
|---|---|---|---|---|---|---|---|---|
| Planted | | | Ears ready for use | | | | | |
| 1920 | 1921 | 1922 | 1920 | 1921 | 1922 | 1920 | 1921 | 1922 |
| May 19th | May 16th | May 17th | Aug. 18th | Aug. 4th | Aug. 11th | 166 | 155 | 232 |
| June 2nd | May 28th | May 30th | Aug. 29th | Aug. 15th | Aug. 21st | 161 | 164 | 199 |
| July 15th | June 7th | June 12th | Sept. 10th | Aug. 25th | Aug. 30th | 143 | 150 | 186 |

It will be noted that the average date on which the experimenters started to plant was May 19th in 1920, May 16th in 1921, and May 17th in 1922. The date on which corn, from the first planting, was ready for table use in the average of the last three years was August 11th. The second planting was ready for table use on August 22nd, and the third planting on September 1st. The largest number of ears were obtained from the first planting and the smallest number from the last planting. The Golden Bantam variety may be planted at a number of different dates, and the season in which it can be used for table purposes extended even beyond the limits indicated in this experiment.

## Varieties of Potatoes.

The yield of potatoes is influenced by many causes, some of these being variety, season, amount of seed planted, fertility of the soil, prevalence of disease, etc. The variety factor, not only influences the yield and quality of potatoes grown, but also has a considerable influence in regulating the size and uniformity of the potatoes put on the market. One of the chief weaknesses in potato growing in Ontario has been the presense of too many different varieties. The number, however, is gradually decreasing, and in the last few years special emphasis has been placed upon the Irish Cobbler of the early, and upon the Green Mountain and the Rural New Yorker of the late varieties. For co-operative experiments, only two varieties of potatoes, namely, the Irish Cobbler and the Green Mountain, have been distributed since 1918. These two varieties have now been included in the co-operative tests for the last five years. In

1922, successfully conducted reports were received from one hundred and twelve experimenters. The following table gives the average results of this experiment in each of the past five years and for the whole period:—

| Varieties | Results of Co-operative Tests | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Percentage Rotten Potatoes | | Percentage Small Potatoes | | Average Yield of Total Crop per acre (bush.) | | | | | |
| | 1922 | Ave. | 1922 | Ave. | 1918 | 1919 | 1920 | 1921 | 1922 | Ave. |
| Irish Cobbler..... | .002 | .4 | 9.9 | 12.9 | 134.3 | 111.1 | 271.5 | 153.4 | 171.9 | 168.4 |
| Green Mountain.. | .002 | .9 | 8.2 | 10.8 | 129.5 | 132.5 | 301.5 | 176.1 | 193.0 | 186.5 |

In four of the five years in which this experiment was conducted, the Green Mountain surpassed the Irish Cobbler in yield per acre. In the average results for the whole five-year period, comprising in all 605 tests, the Green Mountain surpassed the Irish Cobbler by 18.1 bushels per acre per annum. For this experiment care was taken each year to secure seed potatoes which were free from disease and as true to type as possible.

### Northern and Southern Grown Seed Potatoes.

For a period of seven years, an experiment was conducted at the College in testing seed potatoes obtained from different sources. These sources were mainly from southern Ontario, northern Ontario and New Brunswick. Seed potatoes which were obtained about 140 miles north of Guelph in the Muskoka District near the Muskoka Lakes produced higher yields per acre than those obtained from southern Ontario and slightly higher than those obtained from New Brunswick More recently potatoes which have been obtained from Rainy River, Algoma, and Thunder Bay districts have given good results for seed purposes. Whether the good returns are caused by the immaturity of the seed, greater freedom from disease of the northern grown potatoes, or by other selection factors involved is now receiving special attention.

In 1922, two varieties of potatoes were obtained from southern Ontario and the same two varieties from northern Ontario, and these were carefully tested in co-operative experiments throughout the Province. There were in all forty-seven reports received of successfully conducted experiments. The following table gives the average results of this experiment for each of the years 1918, 1919, 1920, 1921 and 1922, and also for the five-year period, which includes in all 328 separate tests:—

| District | Average Yield of Potatoes per Acre (bush.) | | | | | |
|---|---|---|---|---|---|---|
| | 1918 | 1919 | 1920 | 1921 | 1922 | Average |
| Northern Ontario..... | 142.8 | 134.6 | 292.6 | 168.1 | 187.2 | 185.1 |
| Southern Ontario..... | 123.9 | 128.5 | 279.8 | 163.9 | 183.2 | 175.9 |

In each of the past five years, the northern grown seed potatoes produced a higher yield per acre than the seed which was obtained in southern Ontario. The seed obtained from each of the different sources was the best procurable. The average results for the five years' test show that the northern grown seed produced 9.2 bushels per acre per annum more than that obtained from southern seed.

### Fertilizers and Manures with Farm Crops.

For the past thirty-six years, co-operative experiments with manures and fertilizers with farm crops have been conducted throughout Ontario. For the first five years, however, the results were somewhat of a preliminary nature. Since 1889 experiments have been conducted under a general scheme and much valuable information has been secured. The results of experiments conducted through the medium of the Experimental Union in past years may be secured in booklet form by writing to the Experimental Union Secretary, Agricultural College, Guelph.

In 1922 co-operative experiments were conducted with manures and fertilizers on winter wheat and on oats. The co-operative tests with manures and fertilizers with winter wheat belong to a series of tests started many years ago and which include not only winter wheat but also oats, fodder, corn, mangels, swede turnips, and potatoes. In one set of tests, the application of manures and fertilizers with winter wheat was made in the autumn, and in another set of tests they were made in the spring. The co-operative work in the past year has been the application of manures and fertilizers in the spring to the winter wheat crop.

| Kind of Fertilizer used | Average Yield per Acre. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Fertilizer per Acre | | Oats | Fodder Corn | | Mangels | Swede turnips | Potatoes | Winter Wheat Fertilizer applied | |
| | | | | Total | Ears | | | | Autumn | Spring |
| | Exact Wt. | Approximate Cost before the war | 5 yrs. 74 tests | 8 yrs. 47 tests | 8 yrs. 41 tests | 5 yrs. 41 tests | 5 yrs. 18 tests | 5 yrs. 98 tests | 8 yrs. 22 tests | 4 yrs. 9 tests |
| | lbs. | $ c. | bush. | tons | tons | tons | tons | bush. | bush. | bush. |
| Nothing | ..... | ..... | 38.9 | 8.2 | 2.7 | 20.6 | 19.6 | 129.2 | 18.9 | 19.1 |
| Nitrate of Soda | 160 | 4.80 | 46.3 | 9.4 | 3.1 | 26.5 | 22.5 | 153.4 | 22.7 | 23.9 |
| Muriate of Potash | 160 | 4.00 | 43.8 | 9.4 | 3.0 | 24.6 | 23.7 | 160.8 | 22.3 | 25.3 |
| Superphosphate | 320 | 3.92 | 43.6 | 9.0 | 3.1 | 24.2 | 24.7 | 156.8 | 22.4 | 25.5 |
| CompleteFertilizer | 213 | 4.24 | 48.7 | 9.4 | 3.2 | 25.4 | 25.0 | 166.3 | 24.1 | 25.2 |
| Potato Fertilizer | 320 | 5.52 | ..... | ..... | ..... | ..... | ..... | 167.5 | ..... | ..... |
| Royal Canadian | 320 | 5.60 | ..... | ..... | ..... | ..... | ..... | 164.5 | ..... | ..... |
| Cow Manure | 40,000 (20 T.) | 6.00 | ..... | ..... | ..... | ..... | 26.9 | 174.7 | 26.3 | 24.2 |

For the co-operative experiments the fertilizers and seeds have been sent from the College to experimenters each year. In all instances in the experiment the nitrate of soda and the muriate of potash were applied at the rate of 160 pounds per acre, and the superphosphate at the rate of 320 pounds per acre. A mixture of complete fertilizer was composed of one-third the amount of each of these fertilizers and was, therefore, applied at the rate of 213⅓ pounds per acre. As early in the spring as the land was dry enough the fertilizers

were made into a powdered condition by breaking any lumps which had been formed and were applied to their respective plots. The advice to the experimenters was to apply 500 pounds of average cow manure on one plot in each test, the application being equal to twenty tons per acre. The cow manure and the fertilizers were used as a top dressing. The preceding table gives, not only the average results of fertilizers and manure applied in the spring with winter wheat, but also fertilizers applied with a number of other farm crops.

The cost of each fertilizer given in the table represents approximately, under normal conditions previous to the war, the average cost per acre for the fertilizers as used in the co-operative experiments. The quotations were based on the factory prices for quantities of about one ton of each fertilizer. The twenty tons of cow manure would be about twelve good sized loads per acre, and manure in Guelph has been selling at fifty cents per load, which is probably about the average for the Province. It is exceedingly difficult to place a price on farmyard manure as, in most cases it is not purchased, but is produced on the farm. Each person may place such value on the manure as he deems expedient and study the results according to his own circumstances. It should be stated that the freight on the fertilizers and the application of both the fertilizers and the manure are not taken into consideration in the foregoing statement, nor yet is there any account made of the influence of the different fertilizers and the manure upon the land after the first season, except in the later experiments. The results of fertilizers with farm crops over a series of years are studied in connection with the field experiments at the College.

Each experimenter was asked to conduct his fertilizer test on the average soil of his farm. The results here presented are, therefore, for the average soils of Ontario. On some farms the fertilizers paid much better than they did on others. Every farmer who uses fertilizer should know as much as possible about the requirements of his own particular farm. The results here presented speak in a general way regarding the use of these fertilizers under the varying conditions of the farm lands of the Province, and should furnish valuable suggestions.

In the spring of 1920, arrangements were made for testing a low grade and a high grade commercial fertilizer with oats and with spring wheat. These crops were also grown on unfertilized land in each instance in order to form a better basis of comparison. The fertilizers and the grain were distributed from the College for the various tests. In addition to this material, each experimenter was given the choice as to whether he would prefer seeding either class of grain with red clover or with the white flowering sweet clover. The object was not only to ascertain the influence of the fertilizers on the grain crop the first year but also to secure information as to the influence of the fertilizers on the red clover and the sweet clover in the year following. In 1921 and 1922 this experiment was continued in a similar manner with oats but not with spring wheat. An application of 200 pounds per acre of high grade fertilizer (3-8-3) in the average of eight successfully conducted tests in 1921 and 1922 produced 1.5 bushels of oats per acre more than an application of a similar quantity of low grade fertilizer (1-8-1). An application of farmyard manure at the rate of ten tons per acre in the same experiment produced a yield of 3.0 bushels per acre more than the high grade fertilizer and 7.0 bushels more than where no fertilizer was applied.

A MEMBER: How does the Kitchener variety compare with Marquis?

PROF. SQUIRRELL: The Kitchener, in the experiments at the College, has not given quite as large yields per acre as the Marquis variety.

T. H. Mason: Have you the dates of ripening of different varieties of corn?

Prof. Squirrell: Yes, we have the actual dates of maturity of the seven varieties tested. The Longfellow ripened first, and the Wisconsin No. 7 last, in the average of the number of years in which these seven varieties were under test.

T. H. Mason: I would like to draw the attention of the young men present to the possibilities that exist in corn growing. Where corn will mature, there is no other grain which will give anything like the yield that corn will give. The Golden Glow variety gave a yield of 70 bushels to the acre, and I have seen a yield of 100 bushels to the acre in the Chatham district, and I know this yield can be exceeded. Where the climate is suitable, Indian Corn is one of the most profitable crops to grow.

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## THE EUROPEAN CORN BORER—ITS PRESENT DISTRIBUTION IN ONTARIO AND THE OUTLOOK FOR THE FUTURE.

L. Caesar, Professor of Entomology, O.A.C., Guelph.

It was stated last year at the meeting of the Experimental Union that the European corn borer, so far as could be discovered, had been introduced into Ontario in shipments of broom corn from Austria to the broom factory at St. Thomas. This was about thirteen years ago. The insects thus brought in, probably very few in number, established themselves in the corn fields between St. Thomas and Port Stanley.

So far as we can judge either all or nearly all of the millions of borers now in the Province are the descendants of these progenitors. Some think that there was a second introduction of the pest into the part of Welland county opposite Buffalo, and that this time they were brought in in table corn from the infested portions of New York State. There is some doubt in my mind about this.

There is now a heavily infested area within a radius of about 20 miles in all directions from Port Stanley, including most of Elgin county and the lower part of Middlesex. In this area from about 10% to 100% of the plants in almost every early cornfield this year was infested with one or more borers. In the worst fields every plant was attacked, and often a single stalk contained from 5 to 50 borers. Such fields were of course an almost entire loss. Further out the infestation gradually became lighter until at the end of a radius of about 30 or 35 miles from Port Stanley only 1% to 6% of the plants were attacked and most of these contained only a single borer. Beyond this main district the borers ceased to be found in most of the fields, and occurred only in more or less isolated small areas here and there.

The general distribution throughout the Province has been fairly well discovered by scouting during the last three years. The scouting in 1920 showed that the insect was present in Elgin, Middlesex, Kent, Huron, Oxford, Haldimand and Welland. In 1921 it showed that it was also in the following additional counties, Essex, Lambton, Perth, Waterloo, Wellington, Brant, Norfolk, Lincoln, Wentworth and Ontario. In 1922 scouting showed that it was in all the counties west of Toronto except Grey, Dufferin and Simcoe, and that east of Toronto it was in all the counties along the shore of Lake Ontario down to and including Northumberland. Thus, we see that the borer is now here and there throughout the main part of the corn-growing counties of the Province.

The method of distribution or spread in Elgin and Middlesex, where the borer is somewhat uniformly found, was evidently different from that in the rest of the Province, where it is only found in more or less isolated areas throughout the different counties. In Elgin and Middlesex the distribution was apparently due to the normal spread by flight of the moths in all directions from the original centre of infestation near Port Stanley, but in the other counties its spread cannot be accounted for in this manner but may have taken place in several ways:

First. By a long distance flight of moths, especially of fertile females. These long flights may have been due to the moths being carried by high winds, or to some fright which caused them to go much farther than usual, or to a sort of peculiar wanderlust instinct on the part of a few individuals.

Second. To borers being carried in shipments of table corn from infested areas. There is no doubt that, but for the quarantine measures, such cases of transportation would have been much more common.

Third. To borers accidentally getting on automobiles or other vehicles and being carried to their destination and then crawling off and managing to complete their life cycle on near by weeds or corn.

By whatever means distribution is brought about, one thing is certain, namely, that no matter what we may do, the borer will ultimately become distributed throughout the whole Province wherever corn is grown. There is also very little doubt that it will spread throughout all the corn-growing districts of Canada, and also of all North America, for investigation has shown that it can live under a very wide range of climatic conditions. For instance, in the old lands it thrives fairly well in Scandinavia, in Central Europe, in Italy and even in semi-tropical climates like Egypt.

How long it will be before it will be in every county in Ontario, and in every cornfield in these counties, no one can tell. I think, however, that it will be a good many years before it will be generally troublesome in most of the counties north and east of say, Oxford. I expect it to increase much more rapidly in counties like Kent, Essex, and Lambton than in counties like Halton, York and Ontario, for the reason that in the former counties corn is grown chiefly for seed while in the latter it is grown almost entirely for ensilage or fodder purposes. Where corn is grown for seed, the borer has a great deal better opportunity to increase rapidly than where the plants are used for feed purposes; because in the former case the stalks are not devoured but are to a very large extent left lying on the fields or wherever the husking was done; and consequently, as the borers pass the winter in any part of the stalk or in the cob, there will be excellent opportunities for their coming through safely compared with the opportunities afforded where corn stalks are put into a silo or are fed as fodder. Moreover, it is vastly harder to get rid of the stalks and other corn debris by plowing in counties where corn is grown for seed; for the plow will not turn them down completely, and later cultivation will be more likely to bring them up again in spring. The significance of this lies in the fact that if we can manage to plow down and keep down all stalks, stubble and other pieces of corn infested by the borers the borers will perish, but if these are left above ground or dragged up again by cultivation the borers will be able to complete their life cycle and to change into moths and continue to increase.

Mr. Spencer will make this point much clearer to you when he is discussing control, but I think I have said sufficient to show that we may expect the borers to increase more rapidly in the seed-growing areas of the Province.

We now come to the last point, namely, can the insect be controlled? My

answer to this applies only to Ontario or to countries with a climate no warmer than Ontario, or in which there is, as here, only one brood a year. In such places the work done by Mr. G. J. Spencer for the Province, and by Mr. H. G. Crawford for the Dominion, strongly indicates that we are well on the way towards finding a satisfactory method of control. It is not well of course to speak too confidently, for there are often unforeseen difficulties which spring up and cause disappointment and disillusionment; but it looks as if already we have a satisfactory and inexpensive method of control for at least most of the counties of the Province, that is, for those counties where the corn is not grown for seed. Even for the latter, we have strong hopes that we see our way to reach the goal, though many details will first have to be worked out.

There are, moreover, some indications this year that certain natural control factors not yet well understood may from time to time aid us greatly in getting better results from our artificial control measures. Hence my message to you so far as the control of the borer is concerned is one of hope and not of despair.

## CONTROL MEASURES FOR THE EUROPEAN CORN BORER.

G. J. Spencer, Lecturer in Entomology, O.A.C., Guelph.

Let me rapidly review the life history of this insect, which comes from a moth and passes through four stages in its life.

(Illustrated from a chart.)

Egg-laying and the early work of the borer, demonstrated by means of corn stems. The ultimate resting places of the borers in the stem clearly pointed out. What are we going to do with it? To control this pest we must go about it according to the use we put the corn to on our farms.

1. *Is the corn grown for silage?* Then we cut the corn as low as the binder will allow and cut it as clean as we can. A binder will not cut so low in dirty fields as it will in clean fields. No one wants great masses of weeds in his corn sheaves, therefore it calls for clean cornfields. Moreover, since the borers attack all kinds of weeds that grow in among corn, in the fall the weeds themselves may be full of them. The binder removes at least 75% of the borers in a field; it would be a better average to say that it removes about 90%. All borers that go into a silo are killed; fermentation and heat kill them all. Thus the silo is about the single greatest factor in getting rid of great numbers of borers and of killing them surely.

2. *Is the corn grown for husking?* This is a much harder problem. More husking corn is grown then silo corn, and the borer prefers Flint to Dent. Flint fields are usually much worse attacked then Dent fields, probably because the Flint is softer in stem then the Dent, and the little borers enter it more easily. As before, the corn should be cut as low to the ground as possible, so as to carry off as many borers as possible. It is better to cut with a hoe than with a sickle.

What are we going to do with the borers in the Flint stems? After husking, the corn is put into the barn and fed as required. Some farmers shred it before feeding; this helps considerably and kills quite a number of the borers. A few men have their own cutting boxes and cut enough corn to be fed with the silage every few days. Or else they cut it and fed it dry; cattle eat it up better. This cutting-up kills many borers. But the chief danger with husking corn is that the stems may be only partially eaten, and they are then thrown out and the borers are still alive in these stems. The handling of the stems in the barn during the process of feeding tends to disturb the caterpillars, and they may

leave their burrows in the stems and may crawl away into cracks and crevices in the barn, only to turn into moths next year and to continue their damage. It has been proved that though some of the borers in the stems that are thrown out into the barnyards are killed by being trampled into the manure, still, a great number of them are not killed, and are then carried out into the fields where they turn into moths as described, and infest the next year's crop.

Where the stems are plentiful, it is better not to throw the stems into the manure, but to throw them separately into a heap or to load them on to a rack, and to haul them out into a field near by and to burn them, without letting the stock trample all over and scatter them.

All loose stems of corn around a barnyard should be gathered up and burned before the first of June each year, as that is the time that the borers start turning into moths. Also, all loose stems in the corners of the cornfield and any that may be lying around on the road sides, should be burned, as well as all cobs that are lying around in barnyards, because these too, may have borers right inside them.

3. We have thus disposed of the borers that are in the stems of corn after it has been taken from the field.

But the corn stubble and the loose ends of corn stalk (debris) and the weeds in the cornfield may be full of borers. There are enough borers left in these pieces to heavily reinfest a farm the next year, unless these also are destroyed. We have found that early fall plowing is about the best way to get rid of the borers that are left in the field. The earlier the field of stubble is ploughed the sooner do the borers come to the surface, and the cleaner the field has been ploughed the less hiding places are left for the borers during winter, and they then perish. The numbers that come to the surface are in almost direct ratio to the earliness of ploughing. That is, the later the ploughing the fewer borers come to the surface, and the more are left safely under ground where they do not die, but are protected during winter and come to the top next summer and turn into moths. It seems likely that spring plowing also may prove very effective. In any case, the corn stubble field should be ploughed, and if it cannot be done early in the fall (which is often almost impossible) then it should not be done late in the fall, but should be left until the next spring. And in every case, the ploughing should be done as cleanly as is possible, so as to turn under the surface every piece of stubble and debris and old cobs that may be lying on the surface. Clean ploughing leaves every piece of cornstalk under, and no shelter remains for the borers to crawl into when they come out from their burrows in the stems, and they cannot then turn into moths. They must have these shelters to pupate in, and if everything is safely underground, they are exposed to their enemies and to weather conditions, and are killed off or die.

Sometimes it is difficult to plough "clean." There are several factors that help clean ploughing.

(a) Rolling with a heavy roller as soon as the crop is off, will split open about 97% of stubble and will crush it down so that it can be easily turned under, without any long stiff ends sticking up; it also kills a few borers and helps the stalks to rot better underground because it lets water into them.

(b) Ploughing with a chain in cases where the stubble has been left long or the field is full of long weeds enables these to be readily turned under. Using a broad furrow plough with a skimmer is also very effective, and perfectly clean jobs have been obtained where the width of the furrow was changed so as to enable the teamster to get his plough right up alongside a row of stubble, and then to flop it over into the furrow.

Ploughing should be not less than six inches deep, and usually six inches is quite enough. It is not necessary to plough deeper.

Where a field has been badly infested and fairly thoroughly ploughed under, care must be taken not to use any toothed cultivator that will pull the stubble and cornstalks up again. This is important because if the stalks are pulled up again, the good ploughing is of no avail, and the borers will have good places to hide in when they come to the surface. We have found that a disc is the best thing to use after plowing, instead of any kind of toothed harrows or cultivator. Also, if at all possible, a disc drill should be used in putting in the crop that follows the corn. In no case should a hoed crop, or one that requires constant cultivation, be planted in a field of corn that was badly infested by the borer the year before. For this reason, it is unwise to have corn in the same field as the year before. This is sometimes done. The cultivation necessary for these crops, only pulls up the old stubble and lets the borer have good hiding places.

Where a field has been fairly well ploughed, but still has some old stalks and stubble lying on the surface, we have found that it will pay the farmer to hand pick that field. If the field is not too dirty, it can be picked at the rate of ¾ acre per hour per man, and it is well worth the trouble and expense. It is a good deal easier than picking rocks and stones off a field, as so many farmers have to do.

4. Where the crop has been allowed to remain all winter, as is sometimes done when hogs and cattle are turned in in the fall, it is sometimes a problem to turn the long broken off stalks and those lying on the surface of the ground, beneath the soil. In a case like this, the field should be rolled in spring or dragged with a heavy rail cross-raked into windrows and the refuse burned. Then it will plough down quite easily. Especially in parts of Essex and Kent counties where this practice is commonly followed, will the farmers have to take care that their cornfields are cleanly ploughed under in this manner or else the borer will do serious damage there.

5. Plots of sweet corn, whether grown for market or for home purposes, should be carefully cleaned up after the crop has been removed, or else they will serve as fresh places for infestation the next year. It is too often the case that such plots of sweet corn are left standing because they consist of only one or two rows and are not much in the way. But even these few rows can harbor a great many borers and since sweet corn is especially favored by them, all sweet cornstalks should be pulled up by the roots, piled in a heap and burned before the borers turn into moths, that is, before the first of June.

6. So far, I have showed how to get rid of the borer; but we can do a good deal towards avoiding it by planting the corn crop as late as is safe to mature it. The time for late planting will vary greatly according to the part of the Province in which you happen to be, but around Port Stanley, in Elgin county, it has been found possible the last two years, to plant as late as the 7th of June and yet mature the crop sufficiently to make excellent silage or to get good husking corn. This late planting means that the corn will be too short for the first borer moths to lay eggs on it, and the crop will be fairly safe. It has been proved that the earlier maturing the crop, the worse infested it becomes.

7. Again, we avoid having a crop of corn being badly infested by planting Dent varieties instead of Flint. Dent seems to be much more resistant than Flint; it stands up better under attack and also seems to have fewer borers per stem, than the Flint. As far as possible, then, *Dent should be substituted for Flint.*

8. Finally, it is possible to attract those moths that are flying early by planting a trap crop of at least ten rows of corn in the field. These trap rows should be put in at least a week ahead of the main crop even if it means special preparation of the ground for it, and the moths will be attracted to lay their eggs on them; then when the main crop is put in at least a week later than usual, it will have far less injury than it would otherwise have. About the middle of August, begin to cut those trap rows at ground level with a hoe and feed to stock, so as to destroy the borers in them, and the remnants should be raked up and burned.

Now in order to fight against this pest, which is threatening one of our chief crops, what are we asking you to do?

Nothing very difficult; nothing out of the way; nothing expensive in the way of spray mixtures. We are just asking you to change your ordinary crop rotation a little in so far as it affects the corn crop only. We are just asking you to:

1. Plant Dent instead of Flint if you can, cut it as low as possible and put it into the silo.

2. Plough down thoroughly all remnants of the crop that are on the surface of the cornfield, and to do this plough early in the fall if it is at all possible, or to leave it until spring.

3. If you cannot plant Dent for silage but use husking corn, we ask you to destroy by burning all parts of the corn stems that the cattle do not eat, instead of throwing them into the manure or leaving them lying around the barnyard.

4. We ask you to plant not less than ten rows of corn a week earlier for a trap crop and to plant the main crop a week later than usual. Then cut this trap crop early and feed it.

Plough clean; plant Dent and plant it late; use a silo if you can; clean up, clean up, clean up.

A Member: Is the worm we find in the cob the same thing as the corn borer?

Mr. Spencer: Usually in the fall you get the worm; it is larger than the corn borer and called "ear worm," and it is to be found in the ear alone, and not in the stem.

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## SUMMARY OF CO-OPERATIVE EXPERIMENTS IN WEED ERADICATION TO 1922.

J. E. Howitt, Professor of Botany, O.A.C., Guelph.

### Object of these Experiments.

These experiments were begun in 1911 with the object of gathering data from which definite statements might be made regarding the best methods of controlling the various bad weeds of the Province. New weeds have been added from time to time, and it is hoped to add more weeds each year until exact information has been obtained concerning the eradication of all the bad weeds in Ontario.

### Methods of carrying on Experiments.

These experiments were carried on by farmers on their own farms, following the directions supplied by the Director of Co-operative Experiments in Weed Eradication. Each year circulars outlining the experiments for the season were

sent out to the farmers throughout the Province. These circulars listed the weeds to be experimented with and invited all farmers who had any of these troublesome weeds on their farms to join in the experiments. Those who properly filled in the blank application forms attached to the circulars were supplied with directions for carrying out the experiments chosen. In the fall, blank forms were sent to the experimenters on which to report the results of their work.

## Summary of Results of the Eleven Years' Experiments.

The weeds experimented with were Perennial Sow Thistle, Twitch Grass, Bladder Campion or Cow Bell, Wild Mustard, Ox-eye Daisy, Field Bindweed, Wild Oats and Chess. The following is a brief summary of the results obtained from these experiments:—

### Experiment No. 1.

*The use of rape in the destruction of Perennial Sow Thistle.*

| | |
|---|---|
| Number of experimenters | 14 |
| Reporting complete success | 10 |
| Reporting partial success | 3 |
| Reporting failure | 1 |

### Experiment No. 3.

*The use of rape in the destruction of Twitch Grass.*

| | |
|---|---|
| Number of experimenters | 16 |
| Reporting complete success | 12 |
| Reporting partial success | 4 |

### Experiment No. 4.

*Method of cultivation for the destruction of Twitch Grass.*

| | |
|---|---|
| Number of experimenters | 11 |
| Reporting complete success | 4 |
| Reporting partial success | 6 |
| Reporting failure | 1 |

### Experiment No. 5.

*Method for the eradication of Bladder Campion or Cow Bell.*

| | |
|---|---|
| Number of experimenters | 9 |
| Reporting complete success | 5 |
| Reporting partial success | 4 |

### Experiment No. 6.

*Spraying with Iron Sulphate to destroy Mustard in Cereal Crops.*

| | |
|---|---|
| Number of experimenters | 24 |
| Reporting complete success | 21 |
| Reporting partial success | 2 |
| Reporting failure | 1 |

### Experiment No. 7.

*A method of cultivation for the destruction of Ox-Eye Daisy.*

| | |
|---|---|
| Number of experimenters | 3 |
| Reporting complete success | 2 |
| Reporting partial success | 1 |

### Experiment No. 8.

*A method of cultivation and cropping for the suppression of Field Bindweed.*

| | |
|---|---|
| Number of experimenters | 4 |
| Reporting complete success | 2 |
| Reporting partial success | 1 |
| Report not complete | 1 |

## General Results of the Experiments.

*First.*—Over eighty farmers have carried on successful experiments. The weeds experimented with were Perennial Sow Thistle, Twitch Grass, Bladder Campion or Cow Bell, Wild Mustard, Ox-eye Daisy, Field Bindweed, Wild Oats and Chess. Those who took part in these experiments profited by the experience. In nearly every instance they cleaned the field experimented with and demonstrated to their own satisfaction the effectiveness of the method tried, and at the same time their results furnished practical information for others.

*Second.*—As a result of the data gathered from these experiments, it is now possible to recommend with confidence definite methods for the eradication of such weeds as Perennial Sow Thistle, Twitch Grass, Bladder Campion and Wild Mustard.

## Recommendations made from the Results of the Eleven Years' Experiments.

The results of these eleven years' experiments would warrant recommending the following methods for the eradication of Twitch Grass, Perennial Sow Thistle, Wild Mustard and Bladder Campion.

### *The Rape Method for the Control of Perennial Sow Thistle and Twitch Grass.*

Cultivate the field until about the middle of June, running over it frequently with a cultivator so as to keep the tops down and thus weaken the "roots." A cultivator with broad points should be used, which will cut off the Sow Thistle or Twitch Grass below the surface of the ground and not break up the root-stocks too much. About the middle of June apply manure at the rate of about twenty tons per acre (twelve good loads). Cultivate the manure in thoroughly and with a double mouldboard plow, slightly ridge up the land, making the ridges about twenty-six inches apart. On the ridges sow pasture rape (Dwarf Essex variety) at the rate of about one and a half pounds per acre. It is important that the right amount of rape be sown, for if too little is sown the stand will not be thick enough to smother the weeds; and if, on the other hand, too much is sown, the rape plants will be too crowded and not grow vigorously enough to keep ahead of the twitch grass or sow thistle. Sow the rape when the land is sufficiently moist to secure quick germination of the seed. If the rape is slow in starting the twitch grass or sow thistle may get a start in the rows and thus necessitate hand cultivation. Cultivate the rape every week or ten days until it occupies all the ground and makes further cultivation impossible. If, when the rape is cut or pastured, any of the weeds remain, the field should be ridged up last thing in the fall and put in with another hoed crop the following year. This has not been found necessary when a good stand of rape has been secured.

### *Method of Cultivation for the Eradication of Bladder Campion or Cow Bell.*

Badly infested fields should be plowed deeply in the fall, and then cultivated and cross-cultivated with a broad-shared cultivator in order to break up and weaken the underground rootstocks. In the spring this cultivation should be repeated frequently enough to prevent the plant making any growth above ground until it is time to put in a hoed crop, which must be kept thoroughly clean in order to be effective. A well cared for corn crop, planted in hills so that

it can be cultivated both ways, has been found to give excellent results. Special attention must be given to hoeing out any bladder campion plants which may appear in the corn crop and which are not destroyed by cultivation. One fall and one spring's thorough cultivation, followed by a well cared for hoed crop, has been found to destroy practically all the bladder campion in a field, except in exceptionally wet seasons.

### Spraying with Iron Sulphate to prevent Mustard from Seeding in Cereal Crops.

Iron sulphate or copperas can be successfully used to destroy mustard in standing grain without injury to the crop.

#### *Preparation of Solution.*

A 20 per cent. solution should be applied. This can be prepared by dissolving 80 pounds of iron sulphate in 40 gallons of water. Iron sulphate is dissolved quite readily in cold water. The solution should be strained through a cheese cloth as it is put into the spray pump tank. This will remove dirt and small particles that are apt to clog the nozzles.

#### *Time to Apply.*

Apply on a calm, clear day just as soon as the first few plants in the fields show flowers. *It is very important to spray early.* If the plants are left too long, the treatment is not nearly so effective. If a heavy rain comes within 24 hours after the solution is applied, it will be necessary to spray again.

#### *How to Apply the Solution.*

An ordinary hand pump barrel sprayer, such as is employed to spray fruit trees, may be used, or a potato sprayer can be rigged up to do this work. Many of the up-to-date sprayers have a special broadcast attachment for spraying weeds. These are excellent for large areas, as they cover a wide strip at each round. Care must be taken to see that every mustard plant is covered with the solution in the form of a fine spray.

Iron sulphate may be obtained at any hardware store or from The Nichols Chemical Company, Toronto. In wholesale lots it is better purchased from this company, who can supply it much cheaper in large quantities than it can be purchased at local hardware stores.

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## A PRELIMINARY WEED SURVEY OF THE PROVINCE OF ONTARIO.

H. Groh, B.S.A., Department of Botany, Ottawa.

This report, although preliminary so far as the present survey is concerned, is not really the first in its field. The first surveys were made a good many years ago.

When Professor Panton became Instructor in Natural History at the Agricultural College in its early history, he gave a share of his attention to weed problems; and in 1887 issued his first publication in the college series, No. X on "Weeds." This was a small, three-page article which is of interest to us now for the announcement it contains of the recent appearance of the perennial sow thistle in the neighbourhood of Stratford, Ont. In 1893 his "Weeds of Ontario,"

gave the gist of the information collected from 1,015 replies to a circular enquiry as to the ten worst weeds locally in Ontario. In these lists 92 different weeds were named, and the 25 most frequently included were arranged in a separate list in the order of importance as being most frequently reported, as follows:

| | | | |
|---|---|---|---|
| Canada Thistle | 1,015 | Foxtail | 152 |
| Mustard | 666 | Pigweed | 126 |
| Wild Oat | 472 | Black Bindweed | 112 |
| Ox-eye Daisy | 463 | Milkweed | 98 |
| Burdock | 439 | Sorrel | 92 |
| Couch Grass | 401 | Purslane | 82 |
| Ragweed | 303 | Blueweed | 79 |
| Wild Peas | 288 | Mullein | 69 |
| Cockle | 241 | Mayweed | 60 |
| Dock | 232 | Lamb's Quarters | 55 |
| Redroot | 217 | Sow Thistle | 50 |
| Bur | 212 | Bindweed | 46 |
| Wild Flax | 173 | | |

A number of these names, as bur, redroot, etc., are rather indefinite. Several of the weeds standing high on the list, as burdock, for instance, would not impress us now as very seriously interfering with crop production. Some of our worst weeds were even then serious, but the placing of perennial sow thistle and bindweed at the foot of the list of 25 would not now be correct. Canada thistle was mentioned in every report.

For a number of years previous to 1900 also, a committee of the Ontario Agricultural and Experimental Union was engaged in collecting information as to the distribution and prevalence of weeds in Ontario, the outcome of which was the publication of "The Weeds of Ontario," under the authorship of Prof. F. C. Harrison. This bulletin gave a printed page and a full page figure to each of over 30 weeds found to be important in Ontario. Arranged in the order of importance indicated by the reports received, Canada thistle is again placed at the top, and perennial sow thistle and bindweed are considerably higher up, and other changes indicate an increase of certain weeds.

These surveys were very useful and are still of interest to us, but can scarcely be considered a reliable guide to-day. In the twenty odd years since the last survey, quite a change has taken place in the status of many of the weeds, and it ought to be of value to us to have a new survey of the situation. For the hard-headed practical farmer, work on methods of eradication, such as Prof. Howitt's co-operative experiments, may make a stronger appeal, but those of us who have to find an answer for the farmer's enquiries about weeds will readily appreciate the value of the best possible information on the present standing of the various weeds in the various sections of the country. We need to know just where they are, in which directions and how rapidly they are spreading, and what conditions are helping their spread. Some weeds are only in the East, others only in the West, and neither likely to invade the other's territory. Others, both native and introduced, are right now on the march, and changing their status rapidly.

Before presenting a report on the survey undertaken this year, it may be worth while to bring to your attention a piece of weed survey work in Manitoba which had something to do with suggesting the present Ontario survey. In Manitoba the weed problem, owing to the large areas farmed, and the large proportion of grain crop, is a very serious one, and in some respects, at least, is taken seriously. A Weed Act, the best I believe in Canada, is on the Statutes. Inspectors are appointed in practically all municipalities, and are under the direction of a Weeds Administrator. One of their duties in visiting the farms

in their territory is to report, on forms provided, for each quarter section, the presence or otherwise of each of a number of the worst weeds. The reports thus obtained have been utilized in the preparation of municipal weed maps, which have already proven of great service in directing the work against weeds. Through the kindness of Dr. Bedford, the very efficient Weeds Administrator, I was able to make an independent study of these data; and by determining the percentage of sections in each municipality from which a weed is reported, I have prepared maps of the province which show very clearly where the areas of most general infestation occur. A comparison of the maps for perennial Sow Thistle and Russian Thistle shows very strikingly how different weeds may be localized, although the general information usually available gives very little indication of the fact. Both these weeds have been in Manitoba since 1895, a long enough interval to have spread them uniformly over the province, if this is ever to occur, but a glance at the maps shows the greatest infestations of Sow Thistle to be mostly in a belt running diagonally across the province, through the heavy soils of the Red River Valley and northwestward, while Russian Thistle is a serious weed almost alone in the southwest part of the province where the soils are light, and drought has caused repeated crop failures. There is very little overlapping of territory, owing to the soil and moisture preferences of the two weeds, a fact which needs to be borne in mind when advising farmers.

The question naturally occurred whether it might not be possible to extend such a survey to other provinces. In Ontario the absence of weed inspectors made it necessary to seek help in other quarters, and for this preliminary attempt an appeal was made to the Agricultural Representatives who now cover practically the whole province. A circular letter and report form was accordingly sent out last summer, and the response has been very gratifying, forty-one representatives having been heard from. On this form nine of the worst weeds were listed, with a request that they be checked, if known to be in the county; others also to be added which were considered by them to be of prime importance, or most frequently enquired about by farmers. Including the nine weeds listed on the forms, forty-one weeds were mentioned in the reports. The nine were listed present as follows:

| | | | |
|---|---|---|---|
| Canada Thistle | 100% of reports | Bladder Campion | 88% of reports. |
| Couch Grass | 100% of reports | Field Bindweed | 85% of reports. |
| Perennial Sow Thistle | 98% of reports | Chess | 58% of reports. |
| Wild Mustard | 95% of reports | Russian Thistle | 27% of reports. |
| Wild Oats | 88% of reports | | |

It is evident that perennial Sow Thistle is now about as widely distributed among the counties of Ontario as even Canada Thistle. This, in itself, however, gives no indication of the prevalence or distribution of the weeds in the several counties. A further question asking for distribution by townships, when known, was designed as a slight approach towards Manitoba's localization of weed centres, but was not sufficiently answered to admit of compilation. It remains to be seen whether a way may be found to accomplish this important phase of the undertaking.

A question regarding the spread of weeds brought out some valuable information which cannot readily be tabulated. It would appear that many of even the older weeds are still spreading in some counties. Examination of the reports for comments, or other evidences as to which weeds are not considered the most serious, would arrange them in order of frequency so considered, somewhat as follows: Perennial Sow Thistle, Couch Grass, Wild Mustard, Canada Thistle, Field Bindweed, Ox-Eye Daisy, King Devil, Wild Oats, Ragweed,

Bladder Campion, Wild Carrot, etc. Reports of Wild Carrot are rather frequent from Western Ontario, and King Devil and Orange Hawkweed from Eastern Ontario, where rough pasture lands make it difficult to control them. Russian Thistle is the one weed among those listed which seems not to be occasioning any particular concern, even though present. Except in a few sandy areas, as in parts of Norfolk, and Eastern Ontario, it will probably not be an agressive weed with us.

Q.—Do I understand that you advocate the smothering of perennial bindweed with rape?

PROF. HOWITT: I will give you an outline of the method which we have been experimenting with for four years; it takes two years to complete. This is the method we find gives the best results: In the first place, in dealing with bindweed, it is necessary to get on the land as soon as possible in the spring. That appears to be one of the chief secrets of success. If the bindweed gets a chance to form, it shows green growth above the ground in the spring, and very soon stores up a great quantity of food material which the root sucks in underneath. Once the weed gets a start in that way it will stand a great deal of cultivation, and it is very difficult to deal with. The main thing is to get at it in the spring when the plant is weak from coming through the winter. One has to be after it all the time. If possible, use a double mould-board plow. Allow the frost to get at the root, and it will materially help to weaken the plant, and the use of the double mould-board plow will enable you to get the land drained so you can get on the ground early in the spring. It has been our experience here that the bindweed does not spread like a great many other weeds, but once it gets established it is a difficult weed to deal with and requires a great amount of labour.

Q.—Does spraying with iron sulphate apply to all kinds of mustard, and does it have any effect on the Canada thistle?

PROF. HOWITT: It has little effect, it would destroy the leaves that it reaches at the time, but has no permanent effect on the Canada thistle. Take some of the Western mustards: Some have very waxy leaves and the moisture does not stick to them, and you cannot get the same good results.

THE PRESIDENT: Is it on account of the physical nature of the leaf?

PROF. HOWITT: If it has a waxy leaf, it will not stick to it; it may be possible to add a sticker to get it to stick as in spraying fruit trees.

Q.—I thought it was on account of some chemical action in the material of the leaf.

PROF. HOWITT: Yes; but it has to stay there in order to have that effect.

Q.—I understand that the covering of the seed will preserve it for fifty years. Can anything be done to disintegrate the oily covering of the seed?

PROF. HOWITT: There is no way of washing the seed that is in the ground. Fifteen years is the time.

Q.—Is there any way to destroy the Canada thistle? It is one of the worst weeds in the West. If it could be sprayed with anything, it would be a great advantage.

PROF. HOWITT: In the West it is claimed they have had success in spraying the Canada thistle with sodium arsenic. If you are interested, write to Prof. Bolley, of the North Dakota Experimental Station.

MR. T. G. RAYNOR: My observation is that you can go to some sections of the country and pick out the weeds that are prevalent through those districts. When travelling through the country, by looking out of the car window, you can tell pretty well what standard of farming is carried on. In the dairy districts

the farmers keep most of the land seeded down with grass, it is rough pasture land, and that is just where the ox-eye daisy flourishes. In the early days one farmer sold timothy hay to his neighbour, and there was always a great deal of ox-eye daisy in that hay, and it was distributed in that way over nearly all of Quebec and the Eastern part of Ontario.

With regard to King Devil, to which reference has been made, it grows in pasture lands; these lands are not plowed up, and the weed gets in, and then the wind blows it here and there, and it spreads over these areas. If conditions were such that that weed could be plowed up and the land cultivated, King Devil would soon disappear.

The same is true of the Blue Weed. There are many limestone areas all over the country where it gets a start, and in the months of June and July you can see some fields in bloom with that weed. It does not thrive on cultivated land, except at odd times, when there is careless cultivation. It has given some farmers quite a lot of trouble, but the difficulty can be removed through the adoption of a system of rotation.

No mention has been made of Chickory, which we find in the ditches, on the road and in the fence corners, and it occasions little trouble in fields where there is good cultivation.

Mention was made of Wild Carrot, which I saw in this Province fifteen years ago. I predicted that this weed would go through the Province, and it has become very common, in both East and West. In the vicinity of Petrolia and Lambton, near the oil fields, you will see wild barley growing along the railway tracks. It is also to be found in Manitoba. I can take you to places where they are producing red clover seed, and on the roadsides, in the fields, and especially in the fence corners, can be seen Buckhorn. How does that weed get into another section? When the seed merchants in Toronto, London or Hamilton buy the clover seed from the different districts, in bulk, a lot of these weed seeds which are common to our meadows become mixed up with the clover seed, and are sent out to the farmers in the No. 1, No. 2 and No. 3 seed, and there is sufficient quantity to start propagation of some of the worst weeds we have. In that way we get such wide distribution.

Bladder Campion, one of the worst weeds we have, the hardest to eradicate, can go from one section to another in the locality through the exchange of red clover between farmers. I know where to go in the Peterboro district and get any quantity of Bladder Campion seed.

In districts where they grow grain all the time, as in Manitoba, we find Perennial Sow thistle, Wild Oats, Mustard, etc., dominating. You will remember the trouble you had with the Canada thistle, how it spread over the country and covered such a wide area. You will see places where the cultivation has not been thorough, in connection with hoe crops, where rotation has not been practised, one kind of grain has been grown for three or four years in succession, and the Canada thistle was able to get a good start. With the three-year system of rotation, the Canada thistle will practically disappear. As we come to understand this weed we can handle it better.

We have been told that when the Bindweed, or Wild Morning Glory, has been handled with sweet clover, and especially with alfalfa, if properly seeded down, followed with a smothering crop, like the cultivation of rape, results are very satisfactory.

The Perennial Sow thistle, we were told, would give the farmers of Ontario all sorts of trouble; but if the land is underdrained, and a short system of rotation adopted, and a broad sheared cultivator used to cultivate that plant at

the right time of the year, and it is followed up with a smothering crop, we can keep that weed under subjection.

HON. NELSON MONTEITH: I think this is a subject that possibly we might spend full time on profitably. When Mr. Raynor said there was no weed he was afraid of, it is quite evident he is not farming, because I think that weeds are one of the nightmares to the great bulk of active, everyday farmers, at the present time.

There is one point that was not emphasized as much as it might be, that is the drainage question. I have noticed, when one part of the farm has been artificially drained, and the other part naturally drained, that there is a great deal more difficulty in controlling the sow thistle on the portion of the farm artificially drained. But on flat lands, such as we have in the vicinity of Stratford, the Sow thistle has become a serious menace to agriculture, and a great many of the farmers have practically abandoned any attempt to control it. So I feel it is well to emphasize the trouble we are having with that weed.

MR. RAYNOR: When I said it was so easy to kill these weeds, I was speaking figuratively. One trouble about getting rid of the weeds in this country is that a great many farmers are operating a good deal more land than they can thoroughly cultivate, and if the land was divided into smaller holdings a great many of the weed problems would be solved in that way. There are many men who have investments in land, in this country, who do not look after the land, and it is occupied by a tenant, who has not the interest of the owner at heart, and in that way a large territory becomes neglected and a menace to good farmers. I believe we need have no fear of any weed, in any locality, if we attack it in an intelligent way. It means good, hard work, and can only be accomplished by the sweat of our brow; but it can be done, and is being done by a great many farmers throughout the country.

PROF. SQUIRRELL: I would like to ask what is the effect of iron sulphate on clover seeded in cereal crops?

PROF. HOWITT: In our experiments we have not noticed any injury to the clover seed beyond a little blackening of the plant.

The weed problem is largely a labor problem. I think every farmer should fear weeds, because we will always have the weed problem.

MR. BAKER: I think Prof. Howitt has struck the right note. The problem the last few years has been to get the necessary help to do the work, and I have come to the conclusion that if we do not get cheaper help, then we will have to adopt a system of partial summer fallowing to control the weeds. We should summer fallow the land until the first of July, and in that way can get a good stand of rape. We can use a four-horse, broad sheared cultivator. Another system to destroy twitch grass, Canada thistle and sow thistle, is to pasture the land up until June or the first of July, and attack those weeds in their weakest time, by plowing, and cultivating until it freezes up, and the next year there will be no weeds. You do not lose the whole year's crop by a system of partial summer fallowing, and the next year you will get a larger crop than if you had used the ordinary rotation. It has been my experience, with the present shortage of help, that it is impossible to clean the land in the hay meadows, of Canada thistle and twitch grass.

MR. RAYNOR: May I point out another source of danger; I believe the danger of the farmer purchasing noxious weed seeds at fall fairs, in the grain that is being offered, has been getting less; and wild oats are more or less disappearing. In connection with my work, I am examining samples of grain which come from different field crop competitions—largely oats—and a great many samples

have come in, under the present system of cleaning that the farmers have, with a considerable quantity of noxious weed life contained in them. Prizes were given, through the Field Crop Competition, for some of this grain that contains some noxious weed seeds. Because that grain received the prize, it is advertised throughout the country, and farmers think it is a pretty good kind of grain, and, if they do not examine it and detect the noxious weed seeds, then the weeds are spread over the country in grain that should be properly cleaned. It would be a good thing if we had a central place where that grain could be cleaned. Such a scheme is being worked out in the Province of Quebec with good results, and it is my conviction that we should co-operate together and get a central power cleaning plant in districts where farmers are advanced enough to take hold and properly clean the grain. In this way we can do away with spreading of such weeds as the Canada thistle.

Q.—At the present time we cannot get information with regard to the quality of the seed, without the vendor's consent, as to what is actually contained in a No. 1 sample of seed. You have to write for the report to the vendor of that seed.

MR. RAYNOR: That is right.

Q.—Cannot that be changed in some way? If we write for that information we should be able to get what we are actually sowing without sending a new sample because the report has already been given. I think we are entitled to that report, but cannot get it at the present time.

MR. RAYNOR: It would be better if the farmer had sufficient knowledge to be able to determine just what was contained in the sample before he bought it. There is a good deal of trouble about getting a report. It is just a matter of furnishing all the information of the different kinds of weed seeds contained in the sample.

THE PRESIDENT: The speakers have not mentioned some of the worst weeds we have to contend with. I do not believe ragweed was mentioned. At one time I considered that the most persistent weed we had was the bindweed, but I believe the small, unpretentious field ragweed is the worst weed we have, and it is spreading because of its persistency. I do not see any hope for it at all. You can keep it cut down along the roadside, in the field, and in the fence corners, but you cannot dispose of it, it costs too much money and time. The seeds of this weed are lying right on the ground, and there is no possibility of getting at them. I think Prof. Howitt, and Mr. Groh and Mr. Raynor, should give their attention to the problem of this ragweed.

PROF. HOWITT: You will find that you can get rid of the ragweed, by using an iron sulphate solution in spraying, especially on the roadside and in the lane, at a moderate cost, and it will not destroy anything else. The flowers are low down and it is hard to get at them; but if you can get under the ragweed plant when it comes up you can destroy it.

MR. RAYNOR: The ragweed is just as prevalent in other parts of the Province as it is around Uxbridge. Farmers get the ragweed seed in the red clover and do not worry about it a bit. It is a hard weed to deal with under certain conditions because the farmer is busy during harvest and cannot give it attention. Good results can be obtained by a short rotation of sweet clover or some other crop.

## RESULTS OF CO-OPERATIVE EXPERIMENTS IN AGRICULTURAL CHEMISTRY

S. Waterman, B.S.A., O.A.C., Guelph

During the past year under the direction of the Department of Chemistry, O.A.C. considerable experimental work in fertilizers was carried on, in connection with the Experimental Union.

Experience has pointed out that it is unsatisfactory to carry on a large number of small experiments with individuals throughout the country, so a plan of experiment was devised to include a number of plots on one type of soil in one locality. This type called the triangle experiment, permits the use of the three constituents, nitrogen, phosphorus and potash in twenty-one different combinations, with twenty per cent. variations. Thus there will be three plots on which nitrogen, phosphoric acid, and potash respectively; four with phosphoric acid and potash in different proportions; four with phosphoric acid and nitrogen; four with nitrogen and potash, and four with all three constituents in different proportions.

This experiment was laid down on the farm of Mr. R. D. Nodwell, of Hillsburg, with potatoes. It must be pointed out that this field had a heavy crop of sweet clover ploughed down the previous year and a cover crop of rye, ploughed down before planting the potatoes. This provided an excellent supply of organic matter and nitrogen for the potato crop, so that a result from the application of nitrogen fertilizer was not looked for. The results gave ample evidence that phosphoric acid and potash were all the fertilizing constituents needed in this soil. Plot 1. at the rate of 800 lbs. acid phosphate analysis 0-16-0 gave an increase of 49 bushels per acre over the unfertilized at a cost of 26 cents per bushel increase and a total profit over the unfertilized of $36.20 per acre. Plot 2 at the rate of 800 lbs. 0-13-4 fertilizer gave an increase of 99 bushels per acre at a cost of 12⅓ cents per bushel and a total profit of $86.71 per acre over unfertilized.

Attached is a sheet giving results of 14 plots, which showed a profit over the cost of fertilizer.

The plots where nitrogen was applied gave in a few cases a profit, but the cost per bushel of increase was relatively higher; and where nitrogen was present in large percentage a loss was indicated.

This gives, in our opinion, ample proof that if the farmer adopts methods of farming which permit of ploughing into the land at every opportunity cover crops, preferably legumes, he can keep up if not increase the total nitrogen content of his soil and avoid the purchase of any expensive nitrogenous fertilizers.

During the coming year it is the intention of this Department to further extend this type of experiment omitting those plots which have shown a loss in this year's work.

This type of experiment was also laid down in two orchards, near Brantford and Woodstock, with the co-operation of the Fruit Branch, Ontario Department of Agriculture. Unfortunately, both orchards were severely hailed and no results obtainable. It was noted, however, that those trees receiving phosphoric acid ripened the wood better and those receiving nitrogen have a better setting of fruit buds than the untreated.

Mention may be made of a series of experiments begun this year to determine the effect of liming and the use of acid phosphate on wheat followed by clover. These experiments were laid down on three farms in each of eight

counties, making twenty-four experiments in all. The experiment consists of four one-half acre plots—(1) untreated; (2) crushed limestone, 2 tons per acre; (3) crushed limestone, 2 tons per acre, acid phosphate 400 lbs. per acre; (4) 200 lbs. of 3-12-3 complete fertilizer.

The results of these experiments will probably solve the difficulty a number of farmers are experiencing in obtaining a good stand of clover.

| Plot No. | Per plot. | Yield per acre. | Unmarketable per plot. | Unmarketable per acre. | Marketable | Increase over check. | Cost of fertilizer. | Cost per bushel increase. | S. P. $1.00 per bushel. | Profit. | Equivalent fertilizer 800 lbs. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb. | bus. | | bus. | bus. | bus. | | | | | |
| 1 | 110 | 220 | 14½ | 27 | 193 | 49 | $12 80 | $0 26 | $49 00 | $36 20 | 0-16-0 |
| 2 | 140 | 280 | 14½ | 27 | 253 | 99 | 12 29 | 12⅓ | 99 00 | 86 71 | 0-12.8-3.2 |
| 3 | 110 | 220 | 15 | 28 | 192 | 48 | 15 68 | 32⅔ | 48 00 | 32 32 | 3.2-12.8-0 |
| 4 | 113 | 226 | 10½ | 19 | 207 | 63 | 11 77 | 18⅓ | 63 00 | 51 23 | 0-9.6-6.4 |
| 5 | 116 | 232 | 14½ | 27 | 205 | 61 | 15 17 | 25 | 61 00 | 45 83 | 3.2-9.6-3.2 |
| 6 | 107 | 214 | 12½ | 23 | 191 | 47 | 18 56 | 39⅓ | 47 00 | 28 44 | 6.4-9.6-0 |
| 7 | 103 | 206 | 8 | 14 | 192 | 48 | 11 26 | 23½ | 48 00 | 36 74 | 0-6.4-9.6 |
| 8 | 109 | 218 | 7½ | 13 | 205 | 61 | 14 69 | 24 | 61 00 | 46 31 | 3.2-6.4-5.4 |
| 9 | 112 | 224 | 9 | 16 | 208 | 64 | 18 13 | 28 | 64 00 | 45 87 | 6.4-6.4-3.2 |
| 10 | 88 | 176 | 8½ | 15 | 161 | 17 | 21 44 | 1 26 | 17 00 | 4 44 | 9.6-6.4-0 |
| 11 | 90 | 182 | 9 | 16 | 166 | 22 | 10 74 | 49 | 22 00 | 11 26 | 0-3.2-12.8 |
| 12 | 97 | 194 | 8½ | 15 | 179 | 35 | 14 18 | 40½ | 35 00 | 20 82 | 3.2-3.2-9.6 |
| 13 | 112 | 224 | 8½ | 15 | 209 | 65 | 17 61 | 27¼ | 65 00 | 47 39 | 6.4-3.2-6.4 |
| 14 | 94 | 190 | 9 | 16 | 174 | 30 | 20 93 | 69¾ | 30 00 | 9 07 | 9.6-3.2-3.2 |

Mr. Waterman: If any person is largely interested in the results we have accumulated you can receive all the information you may desire at our department. We are only too willing to give the results of our experimental work and assist in any way we can with this subject, which is an important question at the present time: The use of commercial fertilizer, and the use of other methods of building up the soil.

## CO-OPERATIVE HANDLING OF BEE SUPPLIES.

F. Eric Millen, Professor of Apiculture, O.A.C., Guelph.

I do not think there are very many beekeepers here this afternoon, so I am going to give but a brief synopsis of what the Ontario Beekeepers' Association did last year in the handling of bee supplies.

First of all, we did not worry much about handling bee supplies in a co-operative way until the last two years, simply because during the war time period our honey was selling for very good prices, and we did not need to worry about the cost of supplies because the product realized such a good return. People had not been educated to use honey as it should have been used, yet the Beekeepers' Association has done a great deal to improve the method of production, until to-day they are producing over 100 tons of honey a year, and are paying practically all of their attention to the production end of it, and have left the marketing end to take care of itself.

Last year, and this year especially, the price of honey dropped to pre-war prices, but we find that our supplies, and especially our honey cans, have not dropped greatly in price; the price of supplies has not corresponded with the fluctuation in the selling price The Beekeepers' Association are striving to see what can be accomplished in handling bee supplies in a co-operative way.

Beekeepers, like a number of other producers, have got the idea, and we believe it is right, that we can help ourselves very considerably by co-operation.

We feel that if we tell the beekeepers it would be a good thing to co-operate, without showing them some concrete example of what can be done, our chances of success would be very much less than if we were able, during one season's efforts, to show what could be done with regard to a saving in the cost of supplies. We also realize that, finally, our success must lie in the sale of honey. Until we can show something definite, we feel the chance of success is not great.

Last year the Beekeepers' Association decided to purchase honey cans and supplies for the members and, in brief, this is what we did: We purchased over 700,000 honey cans for the members of the O. B. A., also bee supplies. The Association turned over almost $95,000, with no earnest effort at all being made, and there was a saving of approximately $14,000 on the purchase of those supplies to the members of the Association.

At the conference which was held in December, we told the beekeepers what we aimed to do. We had circularized them several times during the season, and we believe we are in a position to go ahead in a co-operative way, and by March we hope to have our plans under way. In a few years we should be in a position to save a good deal of our overhead in the cost of selling honey, and in the purchase of our supplies.

It certainly opened the eyes of a great many beekeepers this year, when they saw what could be done in a small, limited way in the purchase of supplies, when we saved over $14,000. In other words, what we saved on supplies this year would have gone a considerable distance in paying the overhead for the selling of the honey.

Beekeepers are in a better position than some of the other producers, and it is appreciated that honey has considerable value, for the simple reason that the average beekeeper, like the average farmer, is a producer only, and not a salesman. But the time has come when we will produce all we can, and at the same time sell it in a co-operative manner—we will have someone to take care of the selling end, to let the public know the advantages of eating honey. That is why beekeepers must purchase their supplies in a co-operative way, and we believe the beginning we have made will lead to something greater in the future in connection with the selling of our honey.

PROF. SQUIRRELL: I would like to ask if that saving was due to the fact that you bought in large quantities?

PROF. MILLEN: Yes, that was the reason. The Association, of course, has no warehouse in which to store supplies, so we made arrangement first of all with the can company that all the orders should come through the Secretary's office, and he would forward the orders to the manufacturer, who, in turn, would ship.

All the money came through the Secretary's office, and we were responsible to the can company. We did that business without any overhead which, of course, normally would have to be taken care of in the regular way. It was just an effort to show what could be done.

MR. ROBERTSON: I do not think that beekeeping has had the prominent place it should have. Some fellow has said, "Why do you go up there; you are interested in fruit, and not interested in field crops or weed eradication?" But we certainly are interested in bees.

Two years ago we had a snow storm very much like to-day, and people asked themselves, what will we do with the sweet cherry crop? I said, "Do not worry about that, because the snow will keep the frost away; you fellows who

sleep in until ten o'clock in the morning do not know that the temperature has been 6° or 7° below frost." But we do worry. Two years ago we had early blossoming. If the blossoming is late, the insects which come in abundance during the early warm weather injure the blossoms; if we are to succeed with the trees when the blossoms are early we should have bees. When the blossoms come out for the two or three warm hours of the day the bees spread the pollen and fertilize the blossoms, and we should not complain if it means the loss of a little fruit, because it means that we will have an abundant crop. The California Fruit Growers are particular about planting certain varieties of trees which spread pollen and have a system of spraying, first apricots, then in some other part of the country sweet cherries, peaches, plums, and prunes later on. If we do not go around to these functions and see what others grower do, we will be at a disadvantage in competition with them.

Prof. Millen: In one of the bee journals there is an advertisement which states that the almond growers secured three carloads of bees for use in the almond orchards while the almonds were in blossom; that in the only way they can feel certain of a crop of almond nuts. Of course, the beekeeper looks at it from the honey end of the business. The amount of honey produced annually is worth almost $3,000,000 in Ontario, and the value of the field crops is undoubtedly worth a good deal more than honey that the bees gather—the California people pay a great deal of attention to it.

The President: The interdependence of our industries is of great importance; here we have the fruit men discussing beekeepers' problems, and the entomologist interested in the question of bees. We have a great deal in common. This has been an interesting and profitable discussion.

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## RESULTS OF CO-OPERATIVE EXPERIMENTS IN FORESTRY.

E. J. Zavitz, Provincial Forester, Toronto.

Twenty years ago a Forestry Committee of the Experimental Union forwarded the following resolution to the Government of that day:

(1) For establishing at the earliest possible date a School of Forestry, where instruction will be given in practical methods of dealing with forestry problems.

(2) For collecting accurate information from the municipal authorities as to the amount of lands unfit for agriculture in the settled townships of Ontario.

(3) For undertaking the practical reforestation of areas sufficiently large to afford forest conditions, as a demonstration of the utility of the work on these lands, which, from their surroundings, enjoy practical immunity from fire.

(4) For considering some means of adjusting taxation so as to encourage rather than discourage the preservation of farmers' wood lots.

A School of Forestry at the University of Toronto was established shortly after, and I will refer only to the fact that to-day the Ontario Forestry Branch has in its employ twenty technically trained forestry graduates of the School.

For the purposes of this meeting I will refer more particulatly to the results in reforestation in Southern Ontario which the Forestry Committee of 1903 had in mind.

The reforestation problem of Southern Ontario divides itself into two outstanding questions, namely: (1) The problem of improving private woodlands and reforesting private holdings. (2) The problem of reforesting the larger waste land areas situated in the agricultural portions of older Ontario.

That portion of Ontario, lying south of the Laurentian plateau, was cleared and settled for agriculture during the first half of the last century. In the southwestern peninsula, with its fertile soils and mild climate, there originally existed a magnificent forest type, similar to that of Ohio and southern Michigan, with walnut, chestnut, tulip and other valuable hardwoods represented.

In the remaining northern portion of older Ontario, the hardwood type was made up of maple, elm, basswood, beech, red oak, and ash, as the prevalent species. Throughout this southern region white and red pine frequently occurred in mixture with the hardwoods, or in pure stands on the light, sandy formations. The lands of this entire region have passed into private ownership and are negligible from the standpoint of timber production. The forest has disappeared and the farmer's wood lot, often badly culled, represents the only remaining woodland.

From the municipal returns we find that this southern portion of Ontario has less than 10 per cent. of woodland, with many townships showing less than 5 per cent. To a large extent these wood lots have been severely culled and opened to grazing, so that the character of the growth is very inferior.

The private wood lots of Southern Ontario, aggregating some three million acres, present a difficult problem. Legislation has been provided for the remittance of taxes. Educational propaganda through bulletins, farmers' institutes and clubs, has been undertaken; free planting material is being supplied, and yet the farmer's woodlot is not seriously considered by the majority of owners. The influence of this class of woodland on local wood supplies, on the question of protection to crops and buildings from wind and on the provision of shelter for bird life combine to make a solution of the problem imperative for the welfare of agricultural Ontario.

In Southern Ontario, where diversified soil conditions exist, there are few farms which could not advantageously support some forest crop. The writer believes that no education or propaganda equals the actual demonstration of forest plantations. Through the distribution of forest nursery stock during the past few years, plantations have been established in every county of older Ontario. Some five million plants have gone out and these demonstrations are just beginning to have their educational effect. The plantations are usually upon the poorer soils. Some of the more important ones are upon city watersheds, and upon blow-sand areas along the main highways where sand was continuously encroaching upon the road.

The larger waste-land areas, situated in the agricultural portions of older Ontario, present a problem, the solution of which depends upon municipal and provincial enterprises.

In 1909, a forest station, now comprising 1,800 acres, was established in one of these areas in Norfolk County in the Lake Erie district. This Norfolk sand formation, originally covered with pine and oak, was partially cleared for farming and then abandoned. Forest nurseries were established which provide planting material for distribution to other parts of the Province as well as supplying local needs.

Five hundred acres of plantations have been made at this station on blow-sand ridges, abandoned fields and in scrub oak lands. Tree species used in this work have been white pine, red pine, Scotch pine, jack pine, European larch, red oak, chestnut, and Carolina poplar. Small plantations, where soil conditions warrant, have been made with mixtures of the more valuable hardwoods.

Time will not permit a detailed description of the plantations, but the following shows the results on some of the oldest.

The Scotch pine and jack pine plantations are on bare sandy ridges; the red and white pine on sandy fields.

| Species | Age in years | Average Height in feet | Average Diameter in inches |
|---|---|---|---|
| Jack pine | 12 | 21.15 | 3.50 |
| Scotch pine | 12 | 19.61 | 2.72 |
| White pine | 11 | 12. | .... |
| Red pine | 8 | 9.42 | .... |

The results have been very gratifying, and investigation of the work by prominent Government officials and municipal officers from other regions, has assisted greatly in placing reforestation beyond the realm of academic discussion. The local effect is interesting as considerable skepticism existed regarding the initial plantings upon the blowing sand. At present our greatest demand from farmers for planting material is from the region about this forest station, proving that actual demonstration is the best form of education.

The nurseries at this station have been enlarged to a capacity of several million plants per year. We now have five acres in seed beds with an overhead, automatic watering system supplied from a 20,000-gallon tank with a four-inch main. At present these seed beds contain about seven million one-year-old seedlings, comprised chiefly of white pine, scotch pine, jack pine, and white spruce.

Believing that demonstration forest stations in Southern Ontario will greatly assist in solving our problem in this region, the Government has established three new stations which will be developed along lines similar to that of the Norfolk Station. Two years ago a start was made to reforest the sand dunes of Prince Edward County where several hundred acres of crown lands existed along the lake shore near Wellington. In this area experimental plantings with willow and poplar have been made on 200 acres. These dunes are moving badly and the above plantings were made as a nurse crop for protection, preparatory to the introduction of more important species.

During this last season, new forest stations have been opened in Simcoe and Durham counties. These new stations are located in districts which contain considerable poor land and where they should prove a stimulus to reforestation.

In addition to the provincial projects, numerous municipalities have become interested in reforestation. Two years ago legislation was enacted whereby co-operative arrangements can be entered into between municipalities and the province for the reforestation of municipal areas. The municipality purchases the land and the province undertakes the planting and management. These projects will embrace small ten-acre demonstrations along main highways as well as the larger problems of municipal waste areas. Under this municipal arrangement, Simcoe county has secured 1,000 acres of cut-over pine lands. During the last season the Forestry Branch organized a nursery station on this property and reforested over 100 acres as a start.

Fifteen townships have secured smaller areas of from 10 to 25 acres along main highways. Planting has been started on all the above plots.

A close student of the results of forestry practice in France attributes much of the success of private forestry to the early development in that country of state and municipal demonstration forests which became centres of forestry knowledge and inspiration.

Provincial and municipal forest stations in Southern Ontario will assist in securing a future wood supply; will provide demonstrations in forest planting and will assist in preventing futile attempts at agriculture on worthless soils.

Hon. Nelson Monteith : We should not let this subject of forestry pass without further comment. I think there is possibly nothing that will carry us into the future more than if we plant trees. It is the desire of nearly every individual who is humanly constituted to desire to pass on something worth while. I would like to emphasize the wonderful value that tree planting has in a sentimental way of attaching us to the old home, and to the farms upon which we have been reared. From our own experience locally, where we have taken advantage of the liberality of the Government in giving us trees, it has made people sit up and take notice; for instance, the pine plantations on much of the land that was unfit for agricultural purposes have become things of beauty, an adornment to the landscape, and have given a new interest in rural conditions. For that reason I feel that we should emphasize as much as possible the opportunities presented to men who are on the land. Land that is partially unfit for profitable occupation for agriculture should be planted out with pine trees.

Mr. T. H. Mason: I am very glad that Mr. Monteith has risen to stimulate our thought along this line. I felt that it was a mistake that this important paper presented by Mr. Zavitz should be passed so quickly, because it is really one of tremendous importance to the older parts of Ontario. I remember the strenuous fight we put up in connection with the proposed establishment of the School of Forestry in Toronto: we wanted it at the O.A.C. I think it should be here.

I have had the pleasure of seeing that proposition in Norfolk county, and it was a revelation to me. Farmers who are located in blow-sand regions, whose fields were a menace to their neighbours, and who set out a pine plantation eight years ago, have availed themselves of a source of profit and pleasure. I hope some of the young fellows here who may be living on land that is unfit for agriculture will take advantage of the Forestry Stations being established.

Mr. Groh: I would like to say that in the neighbourhood of my home, the original forest was burned off probably within the first ten years of the last century, about 1810. Woodlands have grown up that have furnished timber for my father's barn that was built in 1887, and that timber is about 25 feet in height. So that we have evidence that woods can be grown, and it is worth our while to plant trees.

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## RESULTS OF EXPERIMENTS IN CHICKEN NUTRITION.

W. R. Graham, Professor of Poultry Husbandry, O.A.C., Guelph.

The hatching and rearing of chicks while the snow is on the ground or before the green grass comes is, year by year, becoming more of a common practice. Likewise, the use of large brooders, where all the feed is taken to the chicks, is increasing. One can readily understand that feeds that are successful when the old hen and her chicks are at liberty, or when brooder chicks have a range over tender green feed, etc., may not be successful for the rearing of chicks confined to four walls with board or cement floors.

Winter chicks have been reared at the Poultry Department for over twenty years and many of the troubles that may occur have, at one time or another, been encountered.

The experimental trials were planned mainly with the object of a small

study in feed combinations as these might influence growth, mortality, and leg-weakness. The difficulty in ordinary practice is to keep the chicks on their feet and keep them growing.

Years of experience has demonstrated for us that a basal ration of equal parts of family cornmeal and white shorts suits the digestive tract, or little or no bowel trouble occurs with this ration.

A long pipe brooder house was used for the experiments which would give as nearly uniform conditions as to air, heat, etc., as one could expect.

Sixty Leghorn chicks were used in each of the first trials, all having a common grandfather, and the chicks from different incubators were thoroughly mixed. It was believed that sixty chicks were a fair number for a trial and that the general mixing would eliminate any influence from individual incubators. Considering the numbers used the general breeding was reasonably close.

In the following table no effort in particular has been made to study in detail the question of mineral salt, nor yet the question of the amount of fibre, etc.

There is room for some thought on feed combinations and their general effect upon growth, mortality, and general vigour.

| Ration. | Average weight at 6 weeks' growth. | Mash consumed. | Liver. | Eggs. | Tomatoes. | Milk. | Relation mash to growth. | Percentage mortality of chicks. |
|---|---|---|---|---|---|---|---|---|
| | Oz. | Oz. | Oz. | Oz. | Oz. | Qts. | | |
| No. 1. Corn meal, shorts and water | 3.9 | 556 | ..... | ..... | ..... | ..... | 2.75:1 | 15. |
| No. 2. Corn meal, shorts, milk, eggs, liver, tomatoes | 9.1 | 918 | 57 | 92 | 139 | 53 | 1.648:1 | 0. |
| No. 3. Corn meal, shorts, milk, eggs, tomatoes | 8.5 | 909 | ..... | 136 | 180 | 48 | 1.976:1 | 10. |
| No. 4. Corn meal, shorts, milk, eggs, liver | 9.13 | 919 | 41 | 137 | ..... | 54 | 1.796:1 | 6.6 |
| No. 5. Corn meal, shorts, eggs, liver, tomatoes | 5.1 | 850 | 51 | 85 | 111 | ..... | 2.96:1 | 6.6 |
| No. 6. Corn meal, shorts, milk, liver, tomatoes | 7.2 | 835 | 79 | ..... | 164 | 57 | 2.14:1 | 10. |
| No. 7. Corn meal, shorts, milk | 7.4 | 759 | ..... | ..... | ..... | 92 | 1.89:1 | 11.6 |
| No. 8. Corn meal, shorts, eggs | 7.1 | 644 | ..... | 193 | ..... | ..... | 1.74:1 | 13.3 |
| No. 9. Corn meal, shorts, tomatoes | 4.65 | 536 | ..... | ..... | 211 | ..... | 2.21:1 | 13.3 |
| No. 10. Corn meal, shorts, liver | 5.95 | 552 | 138 | ..... | ..... | ..... | 2.37:1 | 35. |
| No. 11. Corn meal, shorts, eggs, tomatoes | 6.4 | 601 | ..... | 89 | 119 | ..... | 2.03:1 | 23.3 |
| No. 12. Corn meal, shorts, tomatoes, liver | 5.75 | 643 | 68 | ..... | 126 | ..... | 2.32:1 | 20. |

All trials include the basal diet of one-half each of cornmeal and shorts.

No. 1 Lot was fed the basal diet of corn meal and white shorts and given water to drink.
No. 2 Lot was fed the basal diet, plus milk to drink, and the basal diet was alternately moistened with eggs, raw liver, and canned tomatoes.
No. 3 Lot was fed the basal diet, plus milk, eggs, tomatoes, but no liver.
No. 4 Lot was fed the basal diet, plus milk, eggs, and liver, but no tomatoes.
No. 5 Lot was fed the basal diet, plus eggs, tomatoes, and liver, but no milk.
No. 6 Lot was fed the basal diet, plus, milk, tomatoes, and liver, but no eggs.
No. 7 Lot was fed the basal diet, plus milk only.
No. 8 Lot was fed the basal diet, plus eggs only.
No. 9 Lot was fed the basal diet, plus tomatoes only.
No. 10 Lot was fed the basal diet, plus liver only.
No. 11 Lot was fed the basal diet, plus eggs and tomatoes.
No. 12 Lot was fed the basal diet, plus liver and tomatoes.

The feeding trials were continued for a period of six weeks.

There are so many possible and desirable trials to be made in feeding experiments with growing animals that, of necessity, many interesting things are omitted.

From the foregoing trials the feed with milk, eggs, liver, and tomatoes, gave the best results. This has been true in further tests, and, moreover, May-hatched pullets laid very well this season that have been confined all their lives and fed this diet.

Eggs, as a single additional feed to the basal diet, gave the best results.

Liver gave much trouble, not only in deaths, but in crooked breast-bones, and general conditions.

Tomatoes, though lacking in protein, gave better results than were expected.

The amount of feed taken is not in all cases a good indicator of the growth or mortality.

A MEMBER: Would sprouted oats take the place of tomatoes ?

PROF. GRAHAM: No, not very well. We tried sprouted oats and cod liver oil as well as a good many other things, but apparently sprouted oats will not do. Sprouted oats will, however, take the place of tomatoes fairly well after the chicks are three or four weeks old; previous to that they will not do. If you could get rid of the hull it might help some.

Q. : Will skim milk take the place of buttermilk?

PROF. GRAHAM: It is all right if it is sour.

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## PROLIFICACY IN SWINE.

WADE TOOLE, PROFESSOR OF ANIMAL HUSBANDRY, O.A.C., GUELPH.

The average litter is variously estimated at from seven to eight pigs, and yet breeders know that some sows will produce eleven or thirteen pigs and raise them well, while others seem content with three or four. Some say they like a certain breed because the females produce large litters, and these same men condemn other breeds because they believe they throw comparatively small litters. Believing that some authentic information was necessary, the Department of Animal Husbandry at the Ontario Agricultural College started investigational work to reveal the average number of pigs farrowed by sows of seven different breeds in Canada. In the fall of 1920 an investigation of 701 Yorkshire litters and 1,034 Berkshire litters was made, when it was found that the former averaged 11.22 pigs and the latter 9.02 pigs per litter. Both figures appeared rather high, and the work done opened up a wider field for investigation, so two men in their senior year in 1921 were given the problem of investigating 800

litters of each of seven different breeds, viz.: Yorkshire, Tamworth, Berkshire, Hampshire, Chester White, Duroc Jersey and Poland China. This investigation covered the number of litters farrowed in one year. The 5,600 litters farrowed numbered 49,400 pigs or an average per litter of 8.82 for a twelve-months period. This average is higher than most people would believe, and serves to place pure-bred swine in a better light than many see them. Farmers are prone to complain of low fecundity in highly-bred stock. But when 5,600 litters of pigs from pure-bred sows and pure-bred boars of seven different breeds average all told 8.82 pigs per litter the pure-bred pig, so far as fecundity is concerned, stands above criticism, and while some breeds are more productive than others, it will be noticed from a summary of results that each and every breed has a creditable record.

The data from which the results were obtained were secured from the Canadian Live Stock Records, Ottawa. When a breeder makes application to register the progeny of pure-bred sire and dam he must furnish:

1. The number of pigs in the litter.
2. The number of males in the litter.
3. The number of females in the litter.
4. The date of farrowing.

These application forms furnished the source of the information, which is reliable. The following table shows the average number of pigs per litter.

| Breed. | Number of litters. | Average per litter. |
|---|---|---|
| Yorkshire | 800 | 10.2 |
| Tamworth | 800 | 9.4 |
| Berkshire | 800 | 8.3 |
| Hampshire | 800 | 8.2 |
| Chester White | 800 | 9.3 |
| Duroc Jersey | 800 | 8.4 |
| Poland China | 800 | 8.0 |

This table is of interest for several reasons. Besides proving that each and every breed is fairly prolific, it shows that the bacon breeds are in the lead with the Yorkshire at the top. This is important in Canada where the bacon hog is most in demand. It is well to notice, too, that the Berkshire and Hampshire breeds, which are sometimes considered as in between the strictly speaking bacon type and the pronounced lard type are, when grouped together, lower in fecundity than the three lard breeds, viz, Chester Whites, Duroc Jerseys and Poland Chinas, while the Poland, with an average of 8 pigs per litter, stands at the bottom.

Some think that the Canadian climate is too severe for best results in swine. This may be so, but the results of investigational work covering 85,000 litters in the States, showed a litter average of 8.17. While not so many litters were studied in Canada, our average of 8.82 pigs per litter looks favourable to Canada.

Other interesting information was revealed in the work. The percentages of males and females in the 49,400 pigs studied ran 48 per cent. males and 52 per cent. females, showing that the balance of the sexes is fairly well controlled in nature.

By tabulating litters according to months, it was found that the maximum litters were farrowed in the months of January, March, September and October, but that the month of farrowing did not seem to have a very marked effect upon the number of pigs actually farrowed. Undoubtedly if this had been followed up, the month would have been found to have had a very marked effect upon the percentage of pigs raised, for while the market would be benefited

by a continuous supply, a great deal more difficulty is experienced in raising winter litters than in handling young pigs in warm weather. However, it is shown that sows farrow just as large litters in winter as in summer. Condition at time of service has more effect upon size of litter than time of farrowing. Sows should be active, rugged and preferably gaining in flesh when bred. There does seem, however, to be more or less falling off in size of litters farrowed in November and December. This is likely due to the fact that the sows are bred in the heat of summer, and possibly when grain is scarce and pasture short. They are likely in low condition when bred.

The results show that while all of our recognized pure-bred breeds are throwing good litters, the bacon breeds are leading, and an average of from one to two pigs per litter increase is important. Pure-bred swine are prolific. Canadian sows can and do produce large litters. Possibly there is more in strain than in breed in regard to size of litter, but the average is in favour of the Yorkshire and the Tamworth.

MR. RAYNOR: I was wondering if the average age of the sows, when this survey was made, would not be quite a bit older than the average you would find in ordinary farm conditions? I know, as a matter of fact, through the country that a great many young, immature sows are bred. Would it not be a good thing to have a survey of the average conditions over the country. Is there anything in the way the sow has been kept that has to do with controlling the size of the litter?

PROF. TOOLE: You might do something in that regard, Mr. Raynor. Of course these sows, covered by this survey, were kept just a little better than the average grade sow, I presume. Our object in this work was not to set up the average size of litter of all classes of pigs: rather a comparison of the various breeds of the pure-breds. I think the raiser of one particular breed is just as careful how he handles the sow and boar, as the breeder of another breed. It would be interesting, I agree, to get the average of a large number of just ordinary grade, and promiscuously bred, sows. Whether or not these will be older sows, I do not know. If they were, it is more than likely that the increase of the litter would be a little over that of young sows, that is, it is generally thought that a mature sow is more likely to throw a large litter than the young sow. The effect of the boar, to my mind, does not count, but I may be all wrong. The boar whose seminal fluid is productive at all, it seems to me, has done his part; if that is fertile at all it will fertilize the total number of eggs—if you wish to call them eggs—in the womb. It is my contention that the size of the litter is controlled by the particular sow, although her ability to produce a large litter may, to some extent, have been handed down from the boar, her sire.

T. H. MASON: I have had a little experience along this line. I remember one of my neighbours a good many years ago purchased a boar which was a pure-bred Berkshire. There was no other boar in that immediate neighbourhood. He was only eight months old and was given a tremendous patronage, and, as a consequence, I do not think there was a litter from that boar that went over four. There was another case, a few years ago, where the owner of a boar was an extremely poor feeder, he kept the boar half starved, and the results from that boar were very poor. The litters were not only small, but of extremely low vitality. I am satisfied that the boar has a controlling influence.

I commend the work carried on in connection with this survey. It is my experience, with regard to the Poland China breed, which is almost entirely confined to the south-west corner of Ontario, which is the corn belt, that the average litter is not as large there as in the counties farther north. The Chester

Whites are very small in numbers in Ontario, but in the Province of Quebec and in the Maritime Provinces, where there is no corn feeding of hogs, you will find a great number of Chester Whites, widely distributed. Perhaps the section of the country, and what the animals are fed, have some effect. As far as the Duroc Jerseys are concerned, I think perhaps 90 per cent. of the registrations are from the West, where oats and barley are common feed grains.

As far as the hog proposition is concerned, the bacon trade is of the first importance, and the Yorkshire-Tamworth strains of the Berkshire—crosses of the Yorkshire and Berkshire and Tamworth and Berkshire—all give very satisfactory results.

Prof. Toole: With regard to the young boar, and the thin boar, I do not want to mislead you into thinking that you can use a young boar without injuring his virility, nor do I want to lead you to believe that you can starve a hog and get large litters. With respect to the starved hog, no doubt the spermatazoa was there but a very small percentage of it was alive, and that is the reason for a small litter. I would call that pig a non-breeder, almost. The same thing would be true with regard to the young boar. If that boar had been allowed to rest for two or three months he would have come back and likely been all right. The boar should be in good condition, getting plenty of exercise and well fed. The size of the litter does not depend very much on the boar, in my estimation; it is more dependent on the condition of the sow.

We find that this is true in connection with sheep. If the ewe is in good condition before being bred she will produce a larger lamb crop. You should breed hogs that are suitable to your locality.

T. H. Mason: Did you ever observe in your experience that if one ram is with a large number of ewes, in the first part of the copulation period you have a very large percentage of twins, and, as the season advances, there is a slackening off in the number of twins?

Prof. Toole: That has not been my experience; it is likely there would be a slackening off in pasture at the time of breeding.

Mr T. H. Mason: My theory is, whether it is right or not, that the percentage of twins is larger from the first service by the ram, and, with the later services there is a slackening off in the numbers of twins.

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## THE RURAL CREDITS ACT

G. A. Brodie, B.S.A., Agricultural Development Board, Toronto

I am going to speak with regard to a subject that is perhaps not very familiar to most of the people in this audience, and to those in this country; nevertheless, it is one that has been practised for a great many years in European countries, going back for perhaps 150 years, and it has been practised there very largely for the past 50 years. I might say, as well, that I believe countries, generally speaking, who have practised this Rural Credits scheme to the greatest extent have advanced the most rapidly up until the time of the war.

Now, in this Province, it is almost a new thing. In Manitoba, Alberta and Saskatchewan, they have already established the Rural Credits scheme, but we in Ontario have only nicely commenced, having had about one year's experience to date. So we are quite young. I believe this question was discussed here a year or two ago in this building, and you considered that the time was ripe for the Rural Credits scheme to be brought about; and it has been

brought about. There has been a great deal more need of this scheme than was anticipated because the Board thought, in the first place, that if they loaned about a million dollars during the first year it would be a pretty good showing. For your information I want to say that up to the present day there has been three times that amount loaned throughout Ontario, and it will be of interest for you to know that we have had applications to the extent of over $6,000,000 up to the present time. The reason for the great difference between the amount asked for and that actually paid out, was that many asked for loans for periods which the Board could not grant, and so could not come under the Act, and therefore the applicants could not get their loan.

I believe this audience knows that rural Ontario is not prospering as much as she should; and you also know that the great need is "full" co-operation. That is one of the co-operative schemes we have at the present time, which the people are taking hold of, and which I believe is going to count a great deal for the future prosperity of Ontario.

Before I speak of the two loan systems, I want to say something regarding banks, because there is a great misunderstanding throughout this country in that respect. You are aware that the banking institutions fought this organization very hard at first. I think, at the present time, there is really no thought of making war with this institution, because the banks realize, as we all do, that the time has arrived, just the same as in days past when the old stage coach had to give way to something better; so the banking system had to enlarge so as to give service to all the people, to the greatest extent possible.

Our system does not conflict with the banking system of this country, to any great extent—to almost no extent at all —because the banks cannot make loans on farm property, taking a mortgage as security, neither do they lend to the farmers for a period greater than three months. Our system, under the long term loan, covers a period of twenty years, and the short term for twelve months, with the privilege of renewal under certain conditions. So that the two systems do not conflict and our system comes in to fill a long felt want, and is being greatly appreciated by the people who are practising it.

I will take up, in the first place, the long term loan. These are loans made to farmers for periods of twenty years on what is known as the amortization plan, which means that the interest and a certain amount of principal is payable each year, making all the payments equal throughout the twenty years. Those payments are at the rate of 87.18 per thousand loan, or 8.7 interest on the amount of the loan will discharge the whole encumbrance in 20 years.

You might not think that at the present day there are any number of farmers in this country who are paying 8 to 10 per cent. interest on their transactions. That is pretty much in the north country, not so much in this part of Ontario. When people have the advantage of the twenty-year system, with interest at 6 per cent., it is a wonderful chance to make themselves more prosperous.

Just to give you an idea how the business is carried on in the office, I will follow it through in order to give you a better idea. Generally speaking, we get a letter from some person interested, and in answer to that letter we send an application form which simply asks a great number of questions. In answering these questions we obtain information that enables us to know pretty nearly the whole situation of the party requiring the loan. If we consider the application favourably we ask for $12. This is the inspection fee, which is charged throughout the whole of Ontario at a flat rate, and this pays the expense of having an inspection made. There are certain qualifications: The applicant must be

21 years of age, three years resident in Ontario, three years' experience in farming, a naturalized British subject, and of good character.

The purposes for which we will grant a loan are five in number: First, the purchase of a farm; second, to erect farm buildings, third, to pay legacies under a will; fourth, for tile drainage. For these four purposes the Board loans up to 65 per cent. of the value of the property according to our Inspector's valuation. The fifth purpose is: For the removal of an encumbrance, for which the Board loans only up to 40 per cent. of the value of the farm according to our Inspector's valuation. We have about 30 Inspectors in Ontario who do our work; they are situated throughout Ontario, and we try to send the inspector who is situated nearest to the property, or, on account of railway connections, can make the inspection to greatest advantage.

As soon as we have our Inspector's report, the Board sits on that case, and that party is granted the loan in full, or as much as the Board can grant; or it is not granted at all, as the case may be. When the loan is made, it is passed on to our solicitor.

The Board found it necessary, instead of having solicitors scattered over the whole of Ontario, to have a firm of solicitors in Toronto do all the work, because we found that throughout Ontario some solicitors were very moderate in their charge, while others charged an exorbitant rate, thinking the Government was paying it, perhaps. Our solicitors charge us $10 for a loan up to $2,000; $15 for a loan between $2,000 and $6,000; $20 for a loan from $6,000 to $12,000—$12,000 being the maximum amount we loan. On the average our fees have been $23, that includes lawyer's fees—total disbursements. So that you will see our rates are kept pretty well within the mark.

I might say we have had about 4,000 applications for loans throughout Ontario. There has been little advertising done by the Department, because, as the President has already told you, the business has grown to such an extent we can hardly handle it at the present time, having had to increase the office staff considerably from time to time. To give you an idea how it has grown: During the last three months we got applications to the extent of nearly half a million dollars per month. So you may judge whether this system is necessary at the present time.

Perhaps I should have stated the reasons for this great change, but I think it is known to every person in this audience. Before the war we had money available pretty much for this purpose; during the war the retired farmers who had money to loan on mortgages found they could loan their money to better advantage by investing it in Victory Bonds. This made funds scarcer. There is a crisis in this country to-day because people who have money to loan are not willing to advance money on mortgages, and I do not know what the people in this country would do were it not for our organization.

The short-loan system is one whereby we make loans up to $2,000 on the security of a note only. It requires a certain amount of machinery for this short-loan association, and it is that measure that is interfering with the development of the organization, to a considerable extent. There are thirteen short-loan associations operating at the present time throughout Ontario, and I believe they are giving perfect satisfaction, as far as I know.

Regarding the machinery to get this organization in operation. In the first place, it is necessary that thirty farmers, as a minimum, should join together by paying the $100 membership in the Association; ten per cent. of this only is paid in cash; the balance is held on call in case there should be any losses. When these 30 members have subscribed that amount, they then go to the

Township Council who are asked to subscribe for half of the amount; that is, if 30 farmers only are in the Association, the 10 per cent they pay will be $300; the Township Council, then pays over $150 and are responsible for the 90 per cent. which is on call. When they have subscribed that amount, then the Government are asked to subscribe for a like amount; just doubling the security of the farmers. The Government appoint two directors to look after their interest; the township council appoint two directors, in each case for two years; the thirty farmers appoint the President, Vice-President, and one director. That is seven men who constitute the Board of Directors, to whom all applications are made for loans. They select the Secretary-Treasurer, either from among themselves, or their members, or an outsider, as they see fit. And that is the whole Board to whom parties requiring loans make application.

The person wishing a loan will make application on a certain paper for that purpose. He also furnishes a statement of his financial standing to the Board, and the Board either grant the loan in full, or grant a portion of it, or decide not to grant it at all, as the case may be. You will understand that the applicant must have security before he can get the loan, in any event.

The men chosen as directors are the select men of the whole township, and people applying for loans, even if they are inexperienced, can count upon these directors for advice. For example, we often find a splendid young farmer who is apt to go a little too fast, who wants a little too much money; these seven directors are supposed to be men, not only able to make loans, but to act in an advisory capacity. It is wonderful the way in which they are helping the whole farming community.

I might say that the ten per cent. subscribed by the farmer is not used in any way for loans, but that is bound to be invested in bonds, or debentures, something that is entirely safe, and the farmer gets a return for that investment. There is no free gift of money in any case to join this Association.

One per cent. is allowed these Boards for operating, and that will be ample to pay the secretary, and any other expenses in connection with it, and even provide for an over-plus that may be used for a sinking fund, if so desired.

This scheme of Rural Credits is going to elevate the farming community, I am quite sure, and the whole history of the country has been that where the farming community is thrifty and progressive there is no danger with respect to the national life.

Our system to-day is reversed from the old system; the banks have been paying three per cent to the depositor, and the money has been sent to the big centres for commercial purposes, and sent out of the country.

I think we are getting to the proper foundation, building on the right ground, in trying in this way to make the farmer more prosperous.

J. Coke: It seems to me there is one phase of the credit situation that should be pointed out at this time, and that is that the economic status of the agricultural industry has changed very materially within the last five years. The purchasing power of the farmer is greatly reduced; that is to say, that the products which he has to dispose of are selling at almost pre-war prices, while the prices which he has to pay for products which he buys are still at almost post-war prices. Now, when prices of farm products took a downward course we naturally thought the farmer would be the first to be hit, and the other people would soon be in a similar position. However, that has not worked out. While we are moving slowly towards the adjustment of other prices, still the farmer is in the position where he has to go out and do something himself.

I would like to suggest that the farmer can help solve his present economic

condition by cutting expenses at home—the cost of labor, the purchase of equipment, etc.—and do those things himself which he might, under ordinary circumstances, hire a mechanic to do; for example, repairs to buildings. In this way he can save the cost of hiring expensive laborers to do it for him. Some say that is not possible. Well, the situation is serious anyway, and you have to cut expenses to the bone.

That brings up this question also; the costs of production, or operation, on the farms, and the prices which the farmer sells his products for. The Credits Act is for the purpose of permitting the farmer to pay his debts already incurred; not for the expansion of his business. I think that is fundamental in "Credit" at the present time. Present economic conditions do not warrant expansion of the farming business. Some people even go so far as to question whether farmers can maintain the present state of production.

Mr. Brodie emphasized the fact that the Rural Credits institution as developed in Ontario is not a charitable institution. That is also fundamental, because too many people seem to get the idea that any Government scheme is a sort of charity, and they expect loans on a basis different from that which they are able to secure loans from the bank or other institution.

The second fundamental thing about the basis of "Credit" is that only the most efficient men can get credit. That is to say, when you apply for credit to a bank, or Rural Credit institution, or local loan association, you have absolutely to be able to convince that association that you have the ability to take that loan and invest it for production purposes, and be able to pay back principal and interest at a specified date.

It seems to me that the economic situation of the farmer, and the fact that his credit needs are for the purpose of "carrying over"—not for expansion of business—and the fact that the farmer must be impressed with the fact that it is strictly a business proposition, that he has to come before the Board and make an unreserved statement of his assets and liabilities before he can expect any credit from this organization, are fundamental to the success of the Rural Credits scheme.

Mr. Murray: For the past three or four years I have been intimately associated with this work in the province of Manitoba. From my experience there, I would say, as long as there is a careful supervision and careful distinction between the essential differences between the short-term and long-term loans, that the Rural Credits scheme can be worked very satisfactorily indeed. By that I mean,during times like these you will find a great number of men who will accumulate short-term loans with the idea that, as time goes on, if returns are not sufficient, they will convert them into ordinary mortgages running for five years, or into the loan granted from the Agricultural Board for a term of twenty years. It quite often happens that something may transpire between the time when the short-term loans accumulate and the time for which one of the long-term loans has been granted, to prevent him getting the long-term loan he requires; consequently he is loaded up with short-term loans, and is in a very embarrassing position. I think, if the Association keeps that distinctly in mind as they are granting credits, as regards converting the short-term loan into the long-term loan, there shall be no danger of any Board granting more credits than they should.

Then, again, the contention has been put forward that the short-term loan conflicts with the banking business. As far as I have been able to find out, from my experience, the short-term loans are filling a purpose that the banks have not seriously catered to. The terms for which our loans are granted extend

anywhere from 12, 18, 24 months, and do not have to be repaid until the purpose for which the loan was granted has been fulfilled. In that way, the Association has been of great benefit to farmers who require loans to purchase stock, etc.; and they allow the farmer to hold the stock until he can get satisfactory returns. That is of considerable importance, because the period of three months frequently granted by banks, with the uncertainty of a renewal at a later date, may place the farmer in a disadvantageous position.

We will be only too willing, at the office, to render any assistance to any group of farmers, in any township, where they wish to go ahead with such an organization.

Q.—What percentage of interest is charged on short-term loans?

MR. BRODIE: Six and a half per cent.

MR. AMOS: What provision are you making to prevent a party getting loans from further sources, and embarrassing your organization?

MR. BRODIE: Their financial statement will include everything regarding it, and, as the directors are local men, they have a chance to look at the case. Any person who applies for a loan, if his case is not familiar, it will be laid over for further consideration.

MR. AMOS: Supposing another source of monetary help is available to that party, and he secures it to his final embarrassment, and the whole thing goes into insolvency, how can you collect?

MR. BRODIE: The Board protects itself, in the majority of cases, by having a lien note as security, so that if the security is at any time impaired they can register their lien, and they give the debtor the first chance to act in accordance with the process of law.

PROF. FAY: Have there been any repayments? Have there been any extensions under the short-term loan?

MR. BRODIE: Yes, there have been a large number of repayments. The first association was formed about February 1922, and a great number of the applicants have had their payments extended. The payments have been quite satisfactory, under present conditions.

THE CHAIRMAN: As Mr. Brodie has said, the Government has not been advertising the matter because it has been getting a great deal of business.

MR. RAYNOR: Does this Board foster the insurance part that has been practised in connection with the Ottawa branch, with regard to some system of life insurance?

MR. BRODIE: No, we have no insurance in connection with this scheme.

THE CHAIRMAN: In connection with the long-term loans, are the requirements the same as in other companies?

MR. BRODIE: The buildings must be insured up to the full insurable value, and we hold these policies the same as a mortgagee would hold them. Every precaution is taken so there will be no loss to the association, or to the private individual.

Q.—Do you take life insurance as security?

MR. BRODIE: It can be taken as security.

# Ontario Department of Agriculture

FORTY-FOURTH ANNUAL REPORT

OF THE

# AGRICULTURAL

AND

# EXPERIMENTAL UNION

# 1922

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

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1923

# CONTENTS


PAGE

Officers for 1923 ..... 4

Treasurer's Report: A. W. Mason ..... 4

Annual Meeting ..... 5

Secretary's Report: W. J. Squirrell ..... 5

President's Address: J. W. Widdifield, M.P.P. ..... 7

Report on Co-operative Experiments in Field Husbandry for 1922, including tests of cereal grains, potatoes, roots and fodder crops, hay crops, etc.: W. J. Squirrell ..... 9

The European Corn Borer—Its Present Distribution in Ontario and the Outlook for the Future: L. Caesar ..... 24

Control Measures for the European Corn Borer: G. J. Spencer ..... 26

Summary of Co-operative Experiments in Weed Eradication to 1922: J. E. Howitt ..... 29

A Preliminary Weed Survey of the Province of Ontario: H. Groh ..... 32

Results of Co-operative Experiments in Agricultural Chemistry: S. Waterman ..... 39

Co-operative Handling of Bee Supplies: F. Eric Millen ..... 40

Results of Co-operative Experiments in Forestry: E. J. Zavitz ..... 42

Results of Experiments in Chicken Nutrition: W. R. Graham ..... 45

Prolificacy in Swine: Wade Toole ..... 47

The Rural Credits Act: G. A. Brodie ..... 50

To His Honour Henry Cockshutt,
*Lieutenant-Governor of the Province of Ontario.*

May it Please Your Honour:

I have the pleasure to present herewith for the consideration of your Honour the report of the Agricultural and Experimental Union for 1922.

Respectfully submitted,

Manning W. Doherty,
*Minister of Agriculture.*

Toronto, 1923

# Ontario Agricultural and Experimental Union

## OFFICERS FOR 1923.

*President*.....Jack Baker, Hampton, Ont.
*Vice-President*.....William Elliott, M.P., Galt, Ont.
*Secretary*.....C. A. Zavitz, Agricultural College, Guelph.
*Assistant Secretary*.....W. J. Squirrell, Agricultural College, Guelph.
*Treasurer*.....A. W. Mason, Agricultural College, Guelph.
*Directors*.....Pres. J. B. Reynolds, J. W. Widdifield, A. Shantz, W. H. Porter, M. W. Staples.
*Auditors*.....R. C. Moffatt and A. M. Porter.

## COMMITTEES ON CO-OPERATIVE EXPERIMENTAL WORK.

*Field Husbandry*.....C. A. Zavitz (Director), W. J. Squirrell, A. W. Mason, O. McConkey, A. E. Whiteside.
*Agricultural Botany*.....J. E. Howitt (Director), T. G. Raynor, Herbert Groh, W. J. Lennox.
*Forestry*.....E. J. Zavitz (Director), A. H. Tomlinson, H. A. Dorrance.
*Agricultural Chemistry*.....R. Harcourt (Director), S. Waterman, J. A. Neilson, A. H. MacLennan.
*Apiculture*.....F. E. Millen (Director), G. L. Jarvis, O. E. Cameron.
*Farm Literature*.....O. J. Stevenson (Director), W. C. Blackwood, R. E. Balch.
*Agricultural Physics*.....W. C. Blackwood (Director), R. R. Graham, R. C. Moffatt, F. L. Ferguson.
*Bacteriology*.....D. H. Jones (Director), T. H. Lund, A. Davey.
*Animal Husbandry*.....Wade Toole (Director), J. Steckley, R. G. Knox, G. E. Raithby.

## TREASURER'S REPORT, 1922.

| Receipts. | |
|---|---|
| Balance from 1921 | $1,654 38 |
| Government Grant | 2,750 00 |
| Membership Fees, 246 at 50c | 123 00 |
| Interest | 91 23 |
| | $4,618 61 |

| Expenditures. | |
|---|---|
| Agricultural Experiments | $1,696 45 |
| Agricultural Chemistry | 141 89 |
| Agricultural Botany | 48 25 |
| Agricultural English | 15 17 |
| Expenses, Annual Meeting, 1922 | 161 60 |
| Meeting of Executive | 12 65 |
| Printing, Postage, etc., Annual Meeting, 1923 | 283 61 |
| Total | $2,359 62 |
| Balance on hand | 2,258 99 |
| | $4,618 61 |

# Ontario Agricultural and Experimental Union

## ANNUAL MEETING

The forty-fourth annual meeting of the Ontario Agricultural and Experimental Union was held at the Ontario Agricultural College, Guelph, on Tuesday and Wednesday, January 9th and 10th, 1923. This meeting included, in all, six sessions.

The Tuesday evening session was held in the College Cafeteria in conjunction with the O. A. College Central Ontario Alumni, when Professor C. R. Fay of Toronto University and Cambridge, England, dealt with Consumer's Co-operation in Great Britain.

On Wednesday afternoon a joint meeting was held in the College Gymnasium with the Western Ontario Dairymen's Association and the Markets Conference.

At the final session on Wednesday evening, Dr. T. Macklin, of the University of Wisconsin, addressed a joint meeting with the Markets Conference on "Fundamental Principles of Co-operative Marketing."

The sessions were well attended and marked with live discussion and new interest.

## SECRETARY'S REPORT.

W. J. Squirrell, Agricultural College, Guelph.

Organized co-operation, which has been entirely voluntary on the part of the experimenters, has formed the fundamental working basis of the Experimental Union. For a period of thirty-seven years, this work, from a small beginning made in 1886, has been developing economically and substantially, and in the last decade it has supplied material to and received reports from a larger field of operators than any other organization of its kind on the continent. In the first year, twelve farmers volunteered to co-operate in the work, and this number has steadily increased until the organization in the past ten years shows an average annual number of 3,247 experimenters in Field Husbandry alone. A total of over 100,000 farmers have received material for co-operative experiments in Field Husbandry since the organization of the work in 1886. In the first few years, the co-operative experiments were confined entirely to comparisons of varieties of farm crops and different manures and fertilizers. Other lines of agriculture have been added from time to time, until there are now nine separate committees on co-operative work, each committee consisting of a director and two, three, or four other members. A few of the recently conducted co-operative experiments are here referred to very briefly.

In co-operative experiments conducted for five years, excellent results have been obtained in the use of the (dry) formaldehyde treatment for the prevention of oat smut. This is a comparatively simple and inexpensive treatment, and one which is likely to come into general use. Prof. J. E. Howitt is the director on Agricultural Botany.

In 1921, crop tests were made with nitro-bacter soil vaccine, which has been widely advertised. Investigations so far show no special advantage has resulted from the use of this material. Prof. D. H. Jones is chairman of the Committee on Agricultural Bacteriology which is investigating this problem.

A very thorough study has been made of water supply and conveniences in the farm homes of Ontario by R. R. Graham of the Physics Department. A valuable paper on these subjects was presented at the last annual meeting by Mr. Graham, who is making furthe. investigations along these lines.

Dr. O. J. Stevenson's co-operative survey of farm literature has formed a basis on which to recommend plays, debates, etc., suitable for rural Ontario.

Definite methods of eradicating some of the worst weeds in Ontario have been formulated and tested out on numerous farms under the direction of the Experimental Union Committee in Agricultural Botany. The weeds which have received special attention so far have been: perennial sow thistle, bladder campion, wild mustard, twitch grass, and wild oats.

Valuable co-operative experiments are being conducted in re-forestation in some of the older sections of Ontario, and a report of this work will be presented by Prof. E. J. Zavitz, the director of this committee.

The leading varieties of grain crops in the co-operative experiments have been O.A.C. No. 21 barley, Guy Mayle Hulless barley, Wild Goose and Marquis spring wheat, O.A.C. No. 104 and Dawson's Golden Chaff winter wheat, O.A.C. No. 72 and O A.C. No. 3 oats, O.A.C. No. 61 spring rye, Rye and Silver Hull buckwheat, and Pearce's Improved Tree beans.

The leading varieties among the root and potato crops in the co-operative experiments have been Yellow Leviathan mangels, Giant White Feeding Sugar mangels, Ne Plus Ultra swede turnips, Simmers' Improved Giant Short White carrots, and Irish Cobbler and Green Mountain potatoes.

Of the seven varieties of corn recommended by the Ontario Corn Growers' Association, the Golden Glow variety produced the highest yield of grain per acre in the co-operative experiments in the five of the seven years in which this experiment has been conducted.

The O.A.C. No. 181 variety of field peas, which was originated at the Ontario Agricultural College through hybridization, and which was distributed for co-operative experiments in the spring of 1921 for the first time, surpassed each of three other leading varieties in the average of the past two years by almost three bushels of grain per acre.

The standard seed mixture of oats and barley, consisting of one bushel of each by weight, has given a greater yield per acre in the co-operative experiments in the average of the past four years than when either Wild Goose wheat or Golden Vine peas were added to this seed mixture.

Northern grown seed potatoes have outyielded southern grown seed potatoes in the experiments of each of the last five years. The difference, however, does not seem to be great, if selected seed, comparatively free from disease, is obtainable from southern Ontario.

A number of co-operative experiments with fertilizers and manures on farm crops have been conducted. Commercial fertilizers have given more decided results with turnips, mangels, or potatoes. than with oats, winter wheat, or even corn.

The work of the Ontario Agricultural College and of the Experimental Union not only has exerted a marked influence in the betterment of agricultural conditions in Ontario, but this influence has widened to embrace the other provinces of Canada and even the states of the American Union.

## PRESIDENT'S ADDRESS.

J. W. Widdifield, M.P.P., Uxbridge.

It gives me pleasure this morning to welcome you to the Forty-fourth Annual Meeting of our Ontario Agricultural and Experimental Union, and it is a matter of congratulation that we are able to meet this year under particularly favourable auspices. Our fields were blessed this last season with a bountiful harvest, and while it is true that a market, responsive to crop conditions, will absolve the farmer from the charge of profiteering, it is also true that an abundant harvest is always a common blessing, for which our grateful acknowledgment is due.

The Union, in its varied activities through co-operative endeavour, has again added materially to its wealth of information, compiled from year to year, the value of which is patent to every observing farmer in the province. Best varieties for field and garden planting have been ear-marked, best methods of soil cultivation prescribed, fertilizers have been given their place relative to their adaptation to soil conditions and crop requirements, the Committee on Farm Home Convenience and Water Supply, with the assistance of the College Physics Department, has gathered for the homemaker a valuable fund of information on this important subject, the habits of some of our worst insect and weed pests have been studied with a view to their extermination or at least their control, and a survey of the community welfare field is also being made by a special committee, and its recommendations regarding community recreations, and community music, and farm literature, and the home beautiful, and a better rural community life generally, are already helping to make Ontario rural conditions more attractive, and are thus in no small measure discouraging the deprecated present-day exodus from the farm to the great urban centres.

In reviewing our past, we cannot but be pleased with what has been accomplished, but most of our work is before us. The field of our activities has been an ever widening one, and I think there yet are hitherto unexplored areas that might profitably be invaded. As retiring president, I am going to suggest for the Union a department for research work, in the strictly scientific sense of the term. We have been told that there is nothing new under the sun, but there are many old things that have never been really discovered, or at least explained, and the field of discovery lies before us. Nature's apparent jealousy in guarding her secrets is better explained by our own apathy in the matter. The simple truth revealed many years ago, as to the virtue of leguminous plants as gatherers of atmospheric nitrogen, with the joy of success in the discovery of the agency in the process, surely amply repaid for the labour of investigation, and the whole realm of nature is big with promise, the fulfilment only awaiting a diligent search for the truth. Why should not this advanced work be undertaken by an organization whose function is primarily experimentation, enquiry, and investigation? Having available the laboratories of the Ontario Agricultural College, one of the greatest natural science institutions under the sun, and presuming, under a perfect warrant, on the practical sympathy of the Provincial Department, a great deal might be accomplished in the interests of scientific agriculture.

We are pleased to have in joint session with us this week, working co-operatively with us in the interests of successful agriculture, the lately organized Markets' Conference, and the Western Ontario Dairymen's Association, and perhaps, in our common programme, the most outstanding question to be considered will be that of Co-operative Marketing. A year ago this question

prominently featured the discussions at our Union meeting, and again it promises to be an exceedingly interesting topic in this year's programme. In his tour of Ontario this last season, Aaron Sapiro, the great Californian apostle of co-operative marketing on the commodity basis, and who has been instrumental in organizing many Pacific Coast companies for successful operation, told us that nearly every civilized country in the world has had co-operative marketing for farmers for two generations, and that the United States and Canada were the only laggards. We are pleased to know that steps are already being taken by our Department of Agriculture to remove this stigma from Ontario at least. We will have with us at these sesssions other men who are competent like Mr. Sapiro to speak to us from first-hand knowledge of this branch of farm economics, and we hope for a live discussion of this very important subject. Again, the apparently universal applicability of the principle of co-operation as it applies to rural credits will receive consideration, and the recent legislation in this respect will be discussed by a member of the Agricultural Development Board.

The exceedingly interesting and thoroughly practical nature of our programme must appeal to all present, and we trust that you will all, by entering heartily into the discussion, assist in making this the best and most profitable meeting in the history of our Union.

I cannot close without a word of tribute to one who has almost invariably, with his counsel and advice, been present at our meetings but is not with us this morning. I refer to Dr. Zavitz, whose indisposition is known to you, and with regard to whom any word or tribute or praise will, I am sure, touch a responsive chord in the hearts of all present. Dr. Zavitz' interest has ever been inseparably linked up with the life history thus far of the Ontario Agricultural College and the Experimental Union, and his valuable work in the interests of advanced agriculture (I venture the opinion that no man has done more) is known and appreciated in agricultural circles everywhere. His integrity, his unswerving loyalty to duty, and his outstanding personality, have commanded the respect of everybody, and to all who have had the privilege of a near acquaintance with him, personal contact has always meant the closest personal friendship. I am sure I voice the sentiment of not only all present but of a sympathetic province, when for Dr. Zavitz a sincere wish is expressed for a speedy and complete recovery.

Mr. Robertson: Since 1892 the Experimental Union has been linked up with the name of Dr. C. A. Zavitz, and we regret very much he is not here with us. I think it is only right that we, as ex-students, should express to him our sorrow that he is not with us and that we hope for his speedy recovery and wish to thank him for his sincere good wishes for the success of these meetings.

T. H. Mason: It hardly seems like an Experimental Union without Dr. Zavitz being here.

Hon. Nelson Monteith: I have been associated with the Experimental Union for many years and feel that this motion is timely. It is the first time in my remembrance that Dr. Zavitz has been absent from one of these meetings. I have great pleasure in supporting that motion.

Mr. Raynor: I was here ahead of Dr. Zavitz one year. The Experimental Union was organized a little ahead of him, but its existence is due to Dr. Zavitz.

Moved by G. A. Robertson, seconded by T. H Mason, and carried unanimously:

"That we acknowledge the kind wishes for the success of our Annual Meeting of the Experimental Union as expressed in the letter received from Dr. C. A. Zavitz. That his presence has been greatly missed by us. We are pleased to hear of his progress, and hope for his speedy recovery and return."

Mr. J. Baker: We all know the advantages of this organization to the farmers of Ontario; it cannot be estimated in dollars and cents. I think that our Agricultural Societies and Farmers' Clubs, etc., should act more and more as mediums for broadcasting the results of these experiments.

My personal connection with the Farmers' Club in our locality has afforded me the advantage of discussing the reports sent out by the Experimental Union.

The weed problem has come to be a very difficult problem with the farmer, owing to the scarcity of labour during the last few years. Perhaps the Ontario farmer will have to return, partially at least, to the old system of summer fallowing in order to control the weed pest.

In the President's address, he mentioned improvements with respect to farm home conveniences, e.g., heating, water supply, community welfare, etc. I think it is a splendid development of the Experimental Union to branch out in these new departments of endeavour. It is true that there has been a great exodus from the farms, and, if something can be done in this connection to make home life on the farm more attractive, I am sure it would be a good thing.

With regard to the research work which our President has mentioned, it is a very good idea and a suggestion that the Experimental Union should take up.

You will hear a good deal about co-operative marketing; perhaps some of the co-operative marketing associations have not met with the success that might be expected, but we believe that it is the proper system for the farmers of Ontario.

Then, this system of co-operative rural credits is a good move to assist the farmers who have been handicapped by lack of capital. The farmer is still "on the job," and although returns have been disappointing in the last year or two, we can count on the farmer to be there. While he may have a rather pessimistic viewpoint at present, I think that with his inherent plebeian honesty and his tenacity of purpose, he can be depended upon, and he should receive all the help he can from the Ontario Agricultural and Experimental Union to bring Ontario agriculture into its own.

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## REPORT OF CO-OPERATIVE EXPERIMENTS IN FIELD HUSBANDRY FOR 1922, INCLUDING TESTS OF CEREAL GRAINS, POTATOES, ROOTS AND FODDER CROPS, HAY CROPS, ETC.

W. J. Squirrell, Associate Professor in Field Husbandry, O.A.C., Guelph.

In 1922 the committee in Co-operative Experiments in Field Husbandry was as follows: C. A. Zavitz (Director), W. J. Squirrell, A. W. Mason, C. R. Klinck, and A. E. Whiteside. The co-operative experiments in field husbandry was started in 1886 in a small way, and this work has been continuous since that time. The number of experimenters in one single year has been slightly over five thousand.

In the autumn of 1921 material was sent out for seven, and in the spring of 1922 for thirty-six, making in all forty-three distinct and separate experiments within the past year. Definite instructions for carrying on the work were furnished with each of the forty-three experiments. Information regarding the two sets of experiments as sent out to prospective experimenters, to the agricultural journals, and to the newspapers of Ontario was in the following form:—

## Winter Crops, 1921-1922.

Material for any one of the seven experiments here mentioned will be sent free to any Ontario farmer applying for it, if he will conduct an experiment with great care and report the results after harvest next year. The seed will be sent out in the order in which applications are received as long as the supply lasts.

1.—Testing three leading varieties of Winter Wheat..... 3 plots
2.—Testing one leading variety of Winter Rye and one of Winter Wheat..... 2 "
3.—Testing spring applications of five fertilizers with Winter Wheat..... 6 "
4.—Testing Autumn and Spring Applications of Nitrate of Soda and Common Salt with Winter Wheat..... 5 "
5.—Testing Winter Emmer and Winter Barley..... 2 "
6.—Testing Hairy Vetches and Winter Rye as Fodder Crops..... 2 "
7.—Testing mixtures of Hairy Vetches and Winter Rye for Seed Production..... 3 "

The exact size of each plot is to be one rod wide by two rods long. The material for Experiments Nos. 1, 2, 3, 5, 6 and 7 will be forwarded by mail, and for the other one by express. Each person wishing to conduct one of these experiments should apply as soon as possible, mentioning which test he desires, and the material, with instructions for testing and the blank form on which to report, will be furnished free of cost until the supply of experimental material is exhausted.

## Spring Crops, 1922.

The members of the Ontario Agricultural and Experimental Union are pleased to state that for 1922 they are prepared to distribute into every township in Ontario, material for experiments with fodder crops, roots, grains, grasses, clovers and fertilizers. Fully 2,500 varieties of farm crops have been tested in the Experimental Department of the Ontario Agricultural College, Guelph, for at least five years. These consist of nearly all the Canadian sorts, and several hundred new varieties and new strains, a few of which have done exceedingly well in the carefully conducted experiments at the College, and will be used for the co-operative experiments throughout Ontario in 1922.

Each person in Ontario who wishes to join in the work may choose any one of the experiments for 1922, fill out the accompanying form of application, and return the same to the Director of the Co-operative Experiments in Agriculture at as early a date as possible. The material will be furnished in the order in which the applications are received, until the supply is exhausted. A sheet containing the instructions for conducting the chosen experiment, and the blank form on which to report the results of the work, will be sent to each experimenter at the time the fertilizers or seeds are forwarded. All material will be furnished entirely free of charge to each applicant, and the produce of the plots will, of course, become the property of the person who conducts the experiment. In return, the Committee on Agricultural Experiments desires to ask that each experimenter will sow all the plots belonging to the particular experiment which he has chosen for 1922, and that he will be very careful and accurate in his work and forward to the Director a complete report of the results obtained from the test, as soon as possible after the plots are harvested.

All seeds and fertilizers will be sent in good time for spring seeding, providing the applications are received at an early date. The supply of material being limited, those who apply first will be sure of obtaining the desired complement. Each applicant should make a second choice, for fear the first could not be granted. The experiment selected should be indicated by using its number as given in the left hand column in the list of experiments. Further information is given on the application form which is attached.

## LIST OF EXPERIMENTS FOR 1922.

### Grain Crops.

| | Plots |
|---|---|
| 1—Testing two varieties of Oats | 2 |
| 2—Testing O.A.C. No 21 Barley and Emmer | 2 |
| 3—Testing two varieties of Hulless Barley | 2 |
| 4—Testing two varieties of Spring Wheat | 2 |
| 5—Testing two varieties of Buckwheat | 2 |
| 6—Testing three varieties of Field Peas | 3 |
| 7—Testing two varieties of Spring Rye | 2 |
| 8—Testing three varieties of Soy, Soja, or Japanese Beans | 3 |
| 9—Testing eight varieties of Flint and Dent Husking Corn | 8 |

### Roots Crops.

| | |
|---|---|
| 10—Testing three varieties of Mangels | 3 |
| 11—Testing two varieties of Sugar Mangels | 2 |
| 12—Testing three varieties of Swedish Turnips | 3 |
| 13—Testing two varieties of Fall Turnips | 2 |
| 14—Testing two varieties of Carrots | 2 |

### Forage, Fodder, Silage and Hay Crops.

| | |
|---|---|
| 15—Testing the planting of Corn at six distances in the row | 3 |
| 16—Testing Sudan Grass and two varieties of Millet | 3 |
| 17—Testing Sunflower, Sorghum and Corn for fodder | 3 |
| 18—Testing Grass Peas and two varieties of Vetches | 3 |
| 19—Testing Rape, Kale and Field Cabbage | 2 |
| 20—Testing two varieties of Biennial White Sweet Clover | 2 |
| 21—Testing two varieties of Alfalfa | 3 |
| 22—Testing unhulled, hulled and scarified Sweet Clover Seed | 6 |

### Culinary Crops.

| | |
|---|---|
| 23—Testing three varieties of Field Beans | 3 |
| 24—Testing Sweet Corn for table use from different dates of planting | 3 |

### Fertilizer Experiments.

| | |
|---|---|
| 25A—Testing Low and High Grade Fertilizers and Manure with Oats and Red Clover | 4 |
| 25B—Testing Low and High Grade Fertilizers and Manure with Oats and Biennial White Sweet Clover | 4 |
| 26—Testing different quantities of Lime with Sweet Clover | 4 |

### Miscellaneous Experiments.

| | |
|---|---|
| 27—Testing Northern and Southern Grown Seed Potatoes | 2 |
| 28—Testing two varieties of Potatoes | 2 |
| 29—Testing three grain mixtures for Grain production | 3 |
| 30—Testing three grain mixtures for Fodder production | 3 |
| 31—Testing Hubam Sweet Clover at the rate of one pound and four pounds per acre in rows for seed production | 2 |
| 32—Testing Hubam Sweet Clover when cut at three different stages of growth for green fodder and for Hay | 3 |
| 33—Testing two varieties of Hubam Sweet Clover for green fodder and for Hay | 2 |
| 34—Testing Hubam, Biennial White, and Biennial Yellow Sweet Clover for green fodder and for Hay | 3 |
| 35—Testing Hubam, Biennial White and Biennial Yellow Sweet Clover by sowing alone in late June or early July for cover crops | 3 |

The size of each plot is to be two rods long by one rod wide except for numbers 27 and 28 which is to be one rod square. For Experiment number 26, the Experimental Union will furnish the Sweet Clover seed and the experimenter the lime as required.

If you wish to conduct one of the 36 agricultural experiments named on the accompanying circular, kindly fill out this blank form and return it as soon as possible.

The distribution will be confined to the choice varieties included in the various experiments. In filling out the blank form, therefore, it is neither necessary nor advisable to mention any particular variety or varieties.

All materials for experiments with instruction sheets enclosed will be sent by parcel post.

Address all communications to,

C. A. Zavitz, Agricultural College, Guelph, Ont.

Application for Material for an Experiment.

I would like to conduct experiment number....., but if all the material for that experiment has been applied for before my application is received I select experiment number....., as my second choice. If this material for one of these experiments is forwarded to me, I will endeavor to

1. Carry on the test according to the instructions received with the seed;
2. Exercise care and accuracy in work; and
3. Report the result of the experiment as soon as possible after harvest, whether successful or not.

## Weather Conditions.

The total amount of precipitation for each of the six growing months from April to September for 1922 and for the average of the past twenty-three years, as determined in the Department of Physics at the Ontario Agricultural College, is given as follows:—

| Period | April | May | June | July | Aug. | Sept. | Total |
|---|---|---|---|---|---|---|---|
| | inches | inches | inches | inches | inches | inches | inches |
| 1922 (1 year)..... | 4.76 | 2.95 | 4.66 | 2.52 | 2.22 | 3.15 | 20.26 |
| 1900-1922 (23 Years)..... | 2.62 | 2.93 | 2.81 | 3.54 | 2.92 | 2.52 | 17.34 |

It will be seen that the amount of rainfall in each of the months of April, June and September in 1922 was comparatively large, and that for July and August was light. The total amount of rainfall for the six months here mentioned in 1922 was 2.92 inches above the average of the past twenty-three years. This increased amount was made up largely by the rainfalls in the months of April and June.

The August bulletin of the Statistics and Publications Branch of the Ontario Department of Agriculture reports that the rainfall throughout Ontario for the five months, from March to July inclusive, was 14.99 inches or 1.95 inches above the normal of the average of the last forty years. April and June were in excess, while March and May were below their respective averages.

## Results of Co-operative Experiments.

The co-operative experimental work with farm crops has been entirely voluntary on the part of the experimenters. These tests were conducted by the farmers themselves through the helpful co-operation and guidance of the Field Husbandry Committee of the Experimental Union. Voluntary co-operation has been the secret and has made the success of this work.

The reports of the co-operative experiments for 1922 which were received at the College were submitted to the same critical examination as in former years. For the summary report which is here presented, only those individual reports which showed carefulness and reliability in all the essential details of the work were used. Any of those at this meeting who wish to do so may examine these reports as they are all here on the table whether they represent the successfully or the unsuccessfully conducted tests. We have now many experienced experimenters engaged in this work. These men combine extensive practical

experience on the farm, a good education, and a substantial training in experimental work as they have conducted successful tests on their own farms in each of a number of years. Many of the reports not included in the summary, owing to a slight change in the size of the plots or to some unavoidable accident, have exerted a valuable individual influence in furnishing an object lesson to the experimenters and to others, and in supplying good, pure seed of better varieties than were grown on the farm previously.

## Grain Crops

The following gives the summary results in tabulated form of the varieties of grain crops tested throughout Ontario in 1922:—

| Experiments | Varieties | Yield per acre. | | |
|---|---|---|---|---|
| | | Straw (tons) | Grain (bush.) | Grain (lbs.) |
| Oats (23 tests) | O.A.C. No. 72 | 1.94 | 47.74 | 1623 |
| | O.A.C. No. 3 | 1.40 | 42.69 | 1451 |
| | Liberty (Hulless) | 1.89 | 38.68 | 1315 |
| Six-rowed Barley and Emmer (11 tests) | O.A.C. No. 21 | 1.17 | 37.27 | 1789 |
| | Common Emmer | 1.49 | 30.00 | 1440 |
| Hulless Barley (9 tests) | Guy Mayle | 1.30 | 15.33 | 920 |
| | Black Hulless | 1.33 | 14.81 | 889 |
| Spring Wheat (5 tests) | Marquis | .... | 24.00 | 1440 |
| | Wild Goose | .... | 23.53 | 1412 |
| Winter Wheat (11 tests) | O.A.C. No. 104 | 1.78 | 30.96 | 1858 |
| | Kharkov | 1.79 | 28.92 | 1735 |
| | Improved Dawson's Golden Chaff | 1.57 | 28.79 | 1727 |
| | Improved Imperial Amber | 1.66 | 26.69 | 1601 |
| | Yaroslaf | 1.86 | 25.59 | 1535 |
| Winter Rye and Winter Wheat (3 tests) | Winter Rye | 3.03 | 41.12 | 2303 |
| | Winter Wheat | 2.03 | 33.55 | 2013 |
| Buckwheat (2 tests) | Rye or Rough | 2.35 | 36.01 | 1728 |
| | Silver Hull | 2.74 | 22.03 | 1057 |
| Field Peas (36 tests) | O.A.C. No. 181 | 1.05 | 27.49 | 1649 |
| | Early Britain | .81 | 26.10 | 1566 |
| | Potter | 1.08 | 26.10 | 1566 |
| | Canadian Beauty | 1.23 | 24.36 | 1462 |
| Field Beans (5 tests) | Pearce's Improved Tree | .69 | 25.60 | 1536 |
| | Michigan No. 630425 | .49 | 20.44 | 1226 |
| | American Wonder | .49 | 20.20 | 1212 |

In the first column of figures, the yield of straw per acre represents the total crop less the amount of grain and therefore includes the chaff with the straw. In the second column, the yield of grain per acre is given in bushels and, in the third column, in pounds per acre. This makes possible a comparison between the different classes of grains where there is a difference in the standard weights per measured bushel.

*Varieties of Oats*; Three varieties of oats were used in the co-operative experiments in 1922. The O.A.C. No. 72 and the O.A.C. No. 3 have been used in each of the past ten years and the Liberty oat, a new hulless variety originated by Dr. C. E. Saunders, Central Experimental Farm, Ottawa, was used in the co-operative tests for the second time. The Liberty hulless oat has given better results than any other variety of hulless oats which we have tested at the College.

The tabulated results in 1922 show that the Liberty oat gave 1,315 pounds per acre in comparison with 1,623 pounds for the O.A.C. No. 72. In the average results of the past two years, the O.A.C. No. 72 surpassed the Liberty variety by 374 pounds per acre.

The following table gives the average yield per acre of all the co-operative tests made with the O.A.C. No. 72 and the O.A.C. No. 3 varieties of oats in each of the past ten years, also the average results of 667 successfully conducted tests made throughout the Province for the ten-year period:—

| Varieties | Average Yield of Oats per Acre. (Bushels by Weight) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 | Average 10 years |
| O.A.C.No.72 | 52.1 | 52.4 | 52.9 | 47.0 | 45.9 | 54.2 | 41.5 | 50.5 | 41.0 | 47.7 | 48.5 |
| O.A.C.No. 3 | 43.3 | 49.0 | 49.1 | 45.6 | 41.2 | 46.1 | 38.9 | 41.6 | 39.2 | 42.7 | 43.7 |

In every single year of the ten in which this experiment was conducted, the O.A.C. No. 72 variety surpassed the O.A.C. No. 3 variety of oats in yield of grain per acre. The average increase per annum for the whole period being 4.8 bushels per acre in favour of the O.A.C. No. 72. The O.A.C. No. 3 variety is about ten days earlier in maturing than the O.A.C. No. 72 or the Banner. There is no variety of oats grown as a field crop in Ontario which is thinner in the hull than the O.A.C. No. 3.

The two most extensively grown varieties in Ontario at the present time are the O.A.C. No. 72 and the Banner. The O.A.C. No. 3 and the Daubeney are the two most widely grown of the early-maturing varieties.

The following table gives the average of sixteen years' results of these four varieties of oats as tested in the experimental grounds of the Ontario Agricultural College:—

| Varieties | Days to Mature | Percentage of Hull | Yield per Acre | |
|---|---|---|---|---|
| | | | Straw (tons) | Grain (bush.) |
| O.A.C. No. 72 | 110 | 28.5 | 2.17 | 83.23 |
| O.A.C. No. 3 | 100 | 24.1 | 1.88 | 82.73 |
| Banner | 110 | 30.3 | 2.10 | 73.58 |
| Daubeney | 102 | 25.2 | 1.88 | 72.16 |

It is interesting to note that the grain of the O.A.C. No. 72 variety won the sweepstakes prize at the Provincial Winter Fair at Guelph in six of the last seven years.

*O.A.C. No. 21 Barley and Common Emmer.* The O.A.C. No. 21 barley is the chief variety of barley grown in the Province of Ontario and it is now grown to the exclusion of practically all other varieties. This variety is also extensively grown in Western Canada. Common Emmer, which has been widely advertised, has proven to be a large yielder of grain. In experiments at the College, it has shown itself to be a strong competitor with the leading varieties of barley and

the leading varieties of oats in grain production. The O.A.C. No. 21 barley surpassed the Common Emmer by an average yield of 349 pounds of grain per acre in 1922. As these two grains have been used in the co-operative experiments in each of the last ten years, during which time there were 129 successfully conducted tests, it was found that the average yield of grain per acre was 1,615 pounds for the O.A.C. No. 21 barley and 1,358 pounds for the Common Emmer. Barley, therefore, outyielded Emmer in the average of the whole ten-year period by 257 pounds per acre.

*Hulless Barley.* In the co-operative experiments throughout Ontario, the Guy Mayle variety of hulless barley surpassed the Black Hulless variety in the average yield of grain per acre by .5 bushels in 1922 and by less than one-half bushel in the average of the past nineteen years. While there is not much difference between these two varieties in yield per acre, the Guy Mayle variety is the more popular of the two with the experimenters. It is a little stiffer in the straw than the Black Hulless variety. Farmers who wish to grow hulless barley might to advantage use the Guy Mayle variety.

*Spring Wheat.* The Marquis variety of spring wheat surpassed the Wild Goose variety in yield of grain per acre in 1922 by less than one-third of a bushel per acre. In the average of the past ten years in which this co-operative experiment has included these two varieties, successfully conducted tests have been made on 131 Ontario farms. In the average of this ten-year period, the Wild Goose variety has given a yield of 20.4 and the Marquis of 18.8 bushels per acre. The Marquis in Ontario, as in Western Canada, has proven itself to be one of the best of the flour spring wheats. The Wild Goose is one of the best of the macaroni species of wheat

*Winter Wheat.* Five varieties of winter wheat were included in the co-operative test in 1922. The O.A.C. No. 104 variety outyielded the Improved Dawson's Golden Chaff in 1922 by a little over 2 bushels per acre. In the average of six years' tests in which there were 128 successfully conducted experiments, the O.A.C. No. 104 yielded 27.7 and the Improved Dawson's Golden Chaff 26.5 bushels per acre. These were followed by the Imperial Amber, 25.6 ; Kharkov, 23.2; and Yaroslaf, 21.8 bushels per acre.

The O.A.C. No. 104 was originated at the Ontario Agricultural College by crossing the Dawson's Golden Chaff and the Bulgarian varieties. It is a white wheat possessing white chaff similar to the Bulgarian and has a beardless head similar to the Dawson's Golden Chaff. In the field plot experiments at the College and in the co-operative experiments conducted throughout Ontario, it has proven to be an excellent yielder and less subject to winter killing than the Dawson's Golden Chaff.

*Winter Rye and Winter Wheat.* In each of the last seven years, one of the best varieties of winter rye and one of the best varieties of winter wheat have been compared with each other for productiveness in the co-operative experiments. In 1920, 1921, and 1922 the Rosen rye and the O.A.C. No. 104 winter wheat were the crops compared and in the years 1915, 1916, 1918, and 1919 the Petkus rye and the Imperial Amber winter wheat were the varieties included in this test. In the average results in pounds of grain per acre, it was found that the winter rye gave a greater yield than the winter wheat by 290 pounds in 1922, and by 347 pounds per acre in the average of seven years. Without a single exception, the winter rye surpassed the winter wheat each year in yield of grain. In the experiments at the College conducted over a long period of time, varieties of winter rye have proven to be more hardy than the very hardiest of the winter wheat varieties.

*Buckwheat.* In each of eleven years, two varieties of buckwheat have been included in the co-operative tests. The Rye buckwheat surpassed the Silver Hull variety in 1922 by an average of 14 bushels and in the average of the eleven-year period by 8.2 bushels per acre. The Rye buckwheat, which is largely grown in the Maritime Provinces, has proven itself, in the co-operative experiments over Ontario, to be a much larger yielder of grain than the Silver Hull variety. The straw, although finer in texture, is usually slightly less in quantity than the Silver Hull variety. The grain of the Rye buckwheat is rough, the hull somewhat thicker than is found in the Silver Hull variety, and it produces flour with a yellowish tinge.

*Field Peas.* For seven years in succession, the same three varieties of peas have been used in the co-operative experiments. The average for the seven-year period shows an annual yield of grain per acre of 24.3 bushels for the Potter and the Early Britain, and of 23.4 bushels for the Canadian Beauty. In 1921 and 1922, the O.A.C. No. 181 was included in the co-operative tests. The tabulated results show that this new variety surpassed the Potter by 1⅓ bushels per acre in 1922 and in the average of the two years by 2.6 bushels per acre. This new variety of peas was originated at the College through hybridization.

*Field Beans.* Three varieties of field beans were included in the co-operative tests in 1922. The Pearce's Improved Tree bean gave an average yield of 5.2 bushels per acre more than the Michigan No. 630425. The Michigan No. 630425 slightly outyielded the American Wonder variety. The Pearce's Improved Tree bean is a larger strawed and later maturing variety than the Pea bean. In those localities where it can be successfully matured, it is a large yielder of beans of excellent quality.

## Grains Grown in Combination for Grain Production.

A number of experiments have been conducted at the Ontario Agricultural College during the last twenty-three years in growing grains in different combinations for grain production. In 1922, the only cereal crops which occupied a greater area of land than mixed grains in Ontario were oats and winter wheat. It will, therefore, be seen that growing grains in mixtures occupies an important place in crop production in the Province of Ontario.

For six years in succession, an experiment was conducted at the Ontario Agricultural College by growing oats, barley, spring wheat and peas separately and in different combinations for the production of grain. There were six mixtures having two classes of grain; four, having three classes; and one, having four classes of grain in combination. This made in all eleven mixtures besides the four grains grown separately, forming a total of fifteen plots. The experiment was conducted in duplicate each year for six years, making a total of 180 plots. Of all the mixtures used, barley and oats gave the highest returns, this combination producing 193 pounds of threshed grain per acre more than the highest yielding grain grown alone.

Some farmers have been under the impression that if a comparatively small quantity of rye, goose wheat, peas or flax was added to a mixture of oats and barley, they would receive in the resultant crop not only as large a yield of oats and barley as if these two grains had been grown without any additional seed, but that they also would obtain a fair yield of rye, goose wheat, peas or of flax in addition. Results of many experiments at the College have shown that this has not been the case and that so far no additional grain of any kind

has been used with a standard mixture of barley and oats which has not caused an actual reduction in the total yield of grain per acre.

In the spring of 1918, a co-operative experiment was started in order to ascertain whether an addition of one-half bushel of Goose Wheat or one-half bushel of Golden Vine peas to a mixture of one bushel of oats and one bushel of barley would be of any advantage in giving a larger yield throughout Ontario. No results of successfully conducted co-operative experiments were obtained in that year. The following table gives the average results of similar experiments, as herein described, conducted over Ontario in each of the past four years:—

| Mixtures | Yield of Straw per Acre (tons) | | | | | Yield of Grain per Acre (pounds) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1919 | 1920 | 1921 | 1922 | Ave. | 1919 | 1920 | 1921 | 1922 | Ave. |
| Oats 1 bus., Barley 1 bus... | 1.24 | 1.70 | 1.35 | 2.09 | 1.60 | 1,473 | 2.240 | 1,223 | 3,446 | 2,096 |
| Oats 1 bus., Barley 1 bus., Golden Vine Peas, ½ bus... | 1.16 | 1.77 | 1.36 | 2.42 | 1.68 | 1,310 | 2,148 | 1,062 | 3,563 | 2,021 |
| Oats 1 bus., Barley 1 bus., Goose Wheat, ½ bus..... | 1.21 | 1.71 | 1.35 | 2.27 | 1.64 | 1,398 | 1.993 | 1.121 | 3,211 | 1,931 |

The tabulated results show that oats and barley grown in combination without any additional grain produced a greater yield of grain per acre than when either Golden Vine peas or Goose Wheat was added to this mixture. These results have proven to be quite consistent with those obtained at the College through more complicated experiments extending over a much longer period of time. When a high yielding variety of oats and a high yielding variety of barley are sown at the rate of one bushel (34 pounds) of the former and one bushel (48 pounds) of the latter or a total of 82 pounds of the mixture per acre, a high yield may be expected. It is necessary, of course, that the varieties used reach maturity at the same time. A mixture of O.A.C. No. 21 barley (48 pounds per acre) and O.A.C. No. 3 oats (34 pounds per acre) is one that so far has not been surpassed in yield in Ontario.

## Varieties of Corn for Husking.

| Varieties | Average Yield per Acre | | | |
|---|---|---|---|---|
| | Whole Crop (tons) | | Grain (bushels.) | |
| | 1922 | Average 7 years 42 tests | 1922 | Average 7 years 29 tests |
| Golden Glow | 6.76 | 9.90 | 58.57 | 70.06 |
| White Cap Yellow Dent | 9.30 | 9.78 | 63.14 | 64.33 |
| Wisconsin No. 7 | 10.56 | 10.94 | 62.86 | 63.10 |
| Bailey | 9.53 | 9.80 | 64.29 | 63.09 |
| Salzer's North Dakota | 10.81 | 9.30 | 62.00 | 58.65 |
| Longfellow | 8.02 | 9.30 | 47.57 | 58.22 |
| Compton's Early | 7.29 | 8.52 | 42.00 | 53.68 |

Two separate tests of corn experiments were used in the co-operative tests previous to 1916. Each set consisted of a small number of varieties. One set was used for grain production and the other was studied from the standpoint of fodder. In 1916, a co-operative experiment was started in the testing of the seven varieties of corn recommended for growing in Ontario by the Ontario Corn Growers' Association. This experiment has now been conducted for seven years and includes in all 42 separate tests of the whole crop and 29 of the shelled grain. The foregoing table gives the average yield of total crop and of grain per acre of each of the seven varieties of corn tested in Ontario in 1922 and in the average of the past seven years.

The Golden Glow variety gave the highest yield of grain per acre in five out of seven years. This variety has not only proven to be a large yielder of grain per acre but ranks second in yield of whole crop in the average of the seven-year period being only surpassed in this respect by the Wisconsin No. 7 variety. The four varieties producing the highest average yields of grain per acre are Dents and the three varieties which have given the lowest yields are Flints. It will be observed that in 1922 the yields of grain per acre for the seven varieties tested was somewhat below the average of the seven-year period.

## Field Roots and Fodder Crops.

The co-operative experiments were conducted in 1922 with mangels; sugar mangels or stock feeding sugar beets; swede turnips; fall turnips; carrots; grass peas and hairy vetches; sunflowers, sorghum and field corn; and millet. There were thirty good reports of successfully conducted tests with field roots and fodder crops in the past year including six for mangels; four for sugar mangels; five for swede turnips; four for carrots; two for grass peas and hairy vetches; three for sunflowers, sorghum and field corn; and three for millet.

The average results of successfully conducted tests with field roots and fodder crops are presented in the following table:—

| Experiments | Varieties | Yield per Acre (tons) |
|---|---|---|
| Mangels | O.A.C. No. 2 Strain Yellow Leviathan | 34.17 |
| | Keith's Prize Taker Yellow Globe | 30.59 |
| | Sutton's Mammoth Long Red | 29.38 |
| Sugar Mangels | Bruce's Giant White Feeding | 35.70 |
| | White Silesian | 34.15 |
| Swede Turnips | Ne Plus Ultra | 31.22 |
| | Garton's Superlative | 30.69 |
| | Good Luck | 27.74 |
| Carrots | Simmers' Improved Giant Short White | 26.02 |
| | Rennie's Mammoth Short White | 23.60 |
| Grass Peas and Hairy Vetches | Hairy Vetches | 6.70 |
| | Grass Peas | 4.02 |
| Sunflowers, Sorghum, and Field Corn | Sunflowers | 16.52 |
| | Corn | 14.66 |
| | Sorghum | 10.05 |
| Millets | Japanese Panicle | 6.93 |
| | O.A.C. No. 71 | 6.29 |
| | Sudan Grass | 5.97 |

*Varieties of Mangels.* The three varieties of mangels tested in 1922 were also used in the co-operative experiments in the three years previous. In the average of twenty-nine tests conducted in the last four years, these varieties yielded as follows: Sutton's Mammoth Long Red 31.5, Yellow Leviathan 31.0, and Keith's Prize Taker 29.3 tons per acre. The first two varieties included in the above table have been used in the co-operative tests for several years, in the majority of these the Yellow Leviathan has surpassed the Sutton's Mammoth Long Red.

*Sugar Mangels.* The names, sugar mangels and sugar beets for feeding purposes, refer to the same class of roots which are intermediate between mangels and the true sugar beets. Mangels usually have about five per cent., sugar mangels rarely exceed ten per cent. and sugar beets have from fourteen to twenty per cent. of sugar. Sugar mangels have a larger per cent. of the root growing above the ground than sugar beets and are more easily harvested. In the co-operative experiments for three years, the White Silesian variety and the Bruce's Giant White Feeding have each given an average yield of 27.0 tons per acre.

*Swede Turnips.* In the average of the successfully conducted co-operative experiments for the past two years, the Ne Plus Ultra has produced 29.7, the Good Luck 28.8 and the Garton's Superlative 27.5 tons of roots per acre. The three varieties of swede turnips included in this test, in addition to being good yielders, have also proven to be good shippers.

*Field Carrots.* The Simmers' Improved Giant Short White surpassed Rennie's Mammoth Short White in 1922 by 2.4 tons per acre, and in the average of the last three years by .4 tons per acre. The intermediate white field carrots offered by the different seedsmen under different names usually resemble each other very closely in appearance, and there appears to be more difference in the quality of the seed than in the so-called varieties.

*Grass Peas and Hairy Vetches.* Two successfully conducted co-operative reports were received in 1922 when the Hairy Vetches produced an average yield of 6.7 tons and the Grass Peas 4.0 tons per acre. In the average of the last five years in which successful reports were received, Hairy Vetches gave an average of 10.2 tons and Grass Peas of 8.9 tons per acre.

*Sunflowers, Sorghum and Field Corn.* Mammoth Russian sunflowers, Early Amber Sugar sorghum and White Cap Yellow Dent corn were distributed for co-operative experiments in 1921 and 1922. In the average of these two years, seven successfully conducted reports were received giving average yields of 17.8 tons for the Mammoth Russian sunflowers, 13.0 tons for the White Cap Yellow Dent corn, and 8.5 tons of green fodder per acre for the Early Amber Sugar sorghum.

*Millets.* In 1922, the Japanese Panicle millet surpassed the O.A.C. No. 71 millet by .6 tons and the Sudan Grass by 1 ton per acre in the average of three successfully conducted experiments. These three varieties have now been under test for three years and in the average of this period the Japanese Panicle millet produced 8.0 tons, the O.A.C. No. 71 millet 8.0 tons, and the Sudan Grass 5.2 tons of green fodder per acre.

## Dates of Planting Sweet Corn.

More than fifty varieties of sweet corn have been tested at the College, and a few of the best of these have been included in the co-operative tests. The varieties which have been used most extensively in these experiments have been Golden Bantam, Stowell's Evergreen, White Cory and Malakhoff.

In each of the years in which it was tested, the Golden Bantam variety was reported by the experimenters as being the most desirable to grow for home use. In each of six years, previous to 1920, only two varieties were selected for distribution, namely, the Golden Bantam of the early and the Stowell's Evergreen of the late. The Golden Bantam proved more popular with the experimenters, and produced a greater number of ears of corn of better quality than the Stowell's Evergreen variety. The former variety was about ten days earlier than the latter. The Golden Bantam variety is now very widely grown throughout Ontario. In each of the past three years, a co-operative experiment has been conducted in planting the Golden Bantam sweet corn on three different dates. The seed was supplied by the College and each experimenter was advised to plant the corn on three different dates, allowing two weeks to remain between each two dates of planting. The following gives the average results of nine co-operative experiments in 1920, of fifteen in 1921, and of nine in 1922:—

| Dates | | | | | | Number of Good Ears from 50 hills. | | |
|---|---|---|---|---|---|---|---|---|
| Planted | | | Ears ready for use | | | | | |
| 1920 | 1921 | 1922 | 1920 | 1921 | 1922 | 1920 | 1921 | 1922 |
| May 19th | May 16th | May 17th | Aug. 18th | Aug. 4th | Aug. 11th | 166 | 155 | 232 |
| June 2nd | May 28th | May 30th | Aug. 29th | Aug. 15th | Aug. 21st | 161 | 164 | 199 |
| July 15th | June 7th | June 12th | Sept. 10th | Aug. 25th | Aug. 30th | 143 | 150 | 186 |

It will be noted that the average date on which the experimenters started to plant was May 19th in 1920, May 16th in 1921, and May 17th in 1922. The date on which corn, from the first planting, was ready for table use in the average of the last three years was August 11th. The second planting was ready for table use on August 22nd, and the third planting on September 1st. The largest number of ears were obtained from the first planting and the smallest number from the last planting. The Golden Bantam variety may be planted at a number of different dates, and the season in which it can be used for table purposes extended even beyond the limits indicated in this experiment.

## Varieties of Potatoes.

The yield of potatoes is influenced by many causes, some of these being variety, season, amount of seed planted, fertility of the soil, prevalence of disease, etc. The variety factor, not only influences the yield and quality of potatoes grown, but also has a considerable influence in regulating the size and uniformity of the potatoes put on the market. One of the chief weaknesses in potato growing in Ontario has been the presense of too many different varieties. The number, however, is gradually decreasing, and in the last few years special emphasis has been placed upon the Irish Cobbler of the early, and upon the Green Mountain and the Rural New Yorker of the late varieties. For co-operative experiments, only two varieties of potatoes, namely, the Irish Cobbler and the Green Mountain, have been distributed since 1918. These two varieties have now been included in the co-operative tests for the last five years. In

1922, successfully conducted reports were received from one hundred and twelve experimenters. The following table gives the average results of this experiment in each of the past five years and for the whole period:—

| Varieties | Results of Co-operative Tests | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Percentage Rotten Potatoes | | Percentage Small Potatoes | | Average Yield of Total Crop per acre (bush.) | | | | | |
| | 1922 | Ave. | 1922 | Ave. | 1918 | 1919 | 1920 | 1921 | 1922 | Ave. |
| Irish Cobbler..... | .002 | .4 | 9.9 | 12.9 | 134.3 | 111.1 | 271.5 | 153.4 | 171.9 | 168.4 |
| Green Mountain.. | .002 | .9 | 8.2 | 10.8 | 129.5 | 132.5 | 301.5 | 176.1 | 193.0 | 186.5 |

In four of the five years in which this experiment was conducted, the Green Mountain surpassed the Irish Cobbler in yield per acre. In the average results for the whole five-year period, comprising in all 605 tests, the Green Mountain surpassed the Irish Cobbler by 18.1 bushels per acre per annum. For this experiment care was taken each year to secure seed potatoes which were free from disease and as true to type as possible.

### Northern and Southern Grown Seed Potatoes.

For a period of seven years, an experiment was conducted at the College in testing seed potatoes obtained from different sources. These sources were mainly from southern Ontario, northern Ontario and New Brunswick. Seed potatoes which were obtained about 140 miles north of Guelph in the Muskoka District near the Muskoka Lakes produced higher yields per acre than those obtained from southern Ontario and slightly higher than those obtained from New Brunswick. More recently potatoes which have been obtained from Rainy River, Algoma, and Thunder Bay districts have given good results for seed purposes. Whether the good returns are caused by the immaturity of the seed, greater freedom from disease of the northern grown potatoes, or by other selection factors involved is now receiving special attention.

In 1922, two varieties of potatoes were obtained from southern Ontario and the same two varieties from northern Ontario, and these were carefully tested in co-operative experiments throughout the Province. There were in all forty-seven reports received of successfully conducted experiments. The following table gives the average results of this experiment for each of the years 1918, 1919, 1920, 1921 and 1922, and also for the five-year period, which includes in all 328 separate tests:—

| District | Average Yield of Potatoes per Acre (bush.) | | | | | |
|---|---|---|---|---|---|---|
| | 1918 | 1919 | 1920 | 1921 | 1922 | Average |
| Northern Ontario..... | 142.8 | 134.6 | 292.6 | 168.1 | 187.2 | 185.1 |
| Southern Ontario..... | 123.9 | 128.5 | 279.8 | 163.9 | 183.2 | 175.9 |

In each of the past five years, the northern grown seed potatoes produced a higher yield per acre than the seed which was obtained in southern Ontario. The seed obtained from each of the different sources was the best procurable. The average results for the five years' test show that the northern grown seed produced 9.2 bushels per acre per annum more than that obtained from southern seed.

## Fertilizers and Manures with Farm Crops.

For the past thirty six years, co-operative experiments with manures and fertilizers with farm crops have been conducted throughout Ontario. For the first five years, however, the results were somewhat of a preliminary nature. Since 1889 experiments have been conducted under a general scheme and much valuable information has been secured. The results of experiments conducted through the medium of the Experimental Union in past years may be secured in booklet form by writing to the Experimental Union Secretary, Agricultural College, Guelph.

In 1922 co-operative experiments were conducted with manures and fertilizers on winter wheat and on oats. The co-operative tests with manures and fertilizers with winter wheat belong to a series of tests started many years ago and which include not only winter wheat but also oats, fodder, corn, mangels, swede turnips, and potatoes. In one set of tests, the application of manures and fertilizers with winter wheat was made in the autumn, and in another set of tests they were made in the spring. The co-operative work in the past year has been the application of manures and fertilizers in the spring to the winter wheat crop.

| Kind of Fertilizer used | Average Yield per Acre. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Fertilizer per Acre | | Oats | Fodder Corn | | Mangels | Swede turnips | Potatoes | Winter Wheat Fertilizer applied | |
| | | | | Total | Ears | | | | Autumn | Spring |
| | Exact Wt. | Approximate Cost before the war | 5 yrs. 74 tests | 8 yrs. 47 tests | 8 yrs. 41 tests | 5 yrs. 41 tests | 5 yrs. 18 tests | 5 yrs. 98 tests | 8 yrs. 22 tests | 4 yrs. 9 tests |
| | lbs. | $ c. | bush. | tons | tons. | tons | tons | bush. | bush. | bush. |
| Nothing | ..... | ..... | 38.9 | 8.2 | 2.7 | 20.6 | 19.6 | 129.2 | 18.9 | 19.1 |
| Nitrate of Soda | 160 | 4.80 | 46.3 | 9.4 | 3.1 | 26.5 | 22.5 | 153.4 | 22.7 | 23.9 |
| Muriate of Potash | 160 | 4.00 | 43.8 | 9.4 | 3.0 | 24.6 | 23.7 | 160.8 | 22.3 | 25.3 |
| Superphosphate | 320 | 3.92 | 43.6 | 9.0 | 3.1 | 24.2 | 24.7 | 156.8 | 22.4 | 25.5 |
| CompleteFertilizer | 213 | 4.24 | 48.7 | 9.4 | 3.2 | 25.4 | 25.0 | 166.3 | 24.1 | 25.2 |
| Potato Fertilizer | 320 | 5.52 | ..... | ..... | ..... | ..... | ..... | 167.5 | ..... | ..... |
| Royal Canadian | 320 | 5.60 | ..... | ..... | ..... | ..... | ..... | 164.5 | ..... | ..... |
| Cow Manure | 40,000 (20 T.) | 6.00 | ..... | ..... | ..... | ..... | 26.9 | 174.7 | 26.3 | 24.2 |

For the co-operative experiments the fertilizers and seeds have been sent from the College to experimenters each year. In all instances in the experiment the nitrate of soda and the muriate of potash were applied at the rate of 160 pounds per acre, and the superphosphate at the rate of 320 pounds per acre. A mixture of complete fertilizer was composed of one-third the amount of each of these fertilizers and was, therefore, applied at the rate of 213⅓ pounds per acre. As early in the spring as the land was dry enough the fertilizers

were made into a powdered condition by breaking any lumps which had been formed and were applied to their respective plots. The advice to the experimenters was to apply 500 pounds of average cow manure on one plot in each test, the application being equal to twenty tons per acre. The cow manure and the fertilizers were used as a top dressing. The preceding table gives, not only the average results of fertilizers and manure applied in the spring with winter wheat, but also fertilizers applied with a number of other farm crops.

The cost of each fertilizer given in the table represents approximately, under normal conditions previous to the war, the average cost per acre for the fertilizers as used in the co-operative experiments. The quotations were based on the factory prices for quantities of about one ton of each fertilizer. The twenty tons of cow manure would be about twelve good sized loads per acre, and manure in Guelph has been selling at fifty cents per load, which is probably about the average for the Province. It is exceedingly difficult to place a price on farmyard manure as, in most cases it is not purchased, but is produced on the farm. Each person may place such value on the manure as he deems expedient and study the results according to his own circumstances. It should be stated that the freight on the fertilizers and the application of both the fertilizers and the manure are not taken into consideration in the foregoing statement, nor yet is there any account made of the influence of the different fertilizers and the manure upon the land after the first season, except in the later experiments. The results of fertilizers with farm crops over a series of years are studied in connection with the field experiments at the College.

Each experimenter was asked to conduct his fertilizer test on the average soil of his farm. The results here presented are, therefore, for the average soils of Ontario. On some farms the fertilizers paid much better than they did on others. Every farmer who uses fertilizer should know as much as possible about the requirements of his own particular farm. The results here presented speak in a general way regarding the use of these fertilizers under the varying conditions of the farm lands of the Province, and should furnish valuable suggestions.

In the spring of 1920, arrangements were made for testing a low grade and a high grade commercial fertilizer with oats and with spring wheat. These crops were also grown on unfertilized land in each instance in order to form a better basis of comparison. The fertilizers and the grain were distributed from the College for the various tests. In addition to this material, each experimenter was given the choice as to whether he would prefer seeding either class of grain with red clover or with the white flowering sweet clover. The object was not only to ascertain the influence of the fertilizers on the grain crop the first year but also to secure information as to the influence of the fertilizers on the red clover and the sweet clover in the year following. In 1921 and 1922 this experiment was continued in a similar manner with oats but not with spring wheat. An application of 200 pounds per acre of high grade fertilizer (3-8-3) in the average of eight successfully conducted tests in 1921 and 1922 produced 1.5 bushels of oats per acre more than an application of a similar quantity of low grade fertilizer (1-8-1). An application of farmyard manure at the rate of ten tons per acre in the same experiment produced a yield of 3.0 bushels per acre more than the high grade fertilizer and 7.0 bushels more than where no fertilizer was applied.

A Member: How does the Kitchener variety compare with Marquis?

Prof. Squirrell: The Kitchener, in the experiments at the College, has not given quite as large yields per acre as the Marquis variety.

T. H. Mason: Have you the dates of ripening of different varieties of corn?

Prof. Squirrell: Yes, we have the actual dates of maturity of the seven varieties tested. The Longfellow ripened first, and the Wisconsin No. 7 last, in the average of the number of years in which these seven varieties were under test.

T. H. Mason: I would like to draw the attention of the young men present to the possibilities that exist in corn growing. Where corn will mature, there is no other grain which will give anything like the yield that corn will give. The Golden Glow variety gave a yield of 70 bushels to the acre, and I have seen a yield of 100 bushels to the acre in the Chatham district, and I know this yield can be exceeded. Where the climate is suitable, Indian Corn is one of the most profitable crops to grow.

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## THE EUROPEAN CORN BORER—ITS PRESENT DISTRIBUTION IN ONTARIO AND THE OUTLOOK FOR THE FUTURE.

L. Caesar, Professor of Entomology, O.A.C., Guelph.

It was stated last year at the meeting of the Experimental Union that the European corn borer, so far as could be discovered, had been introduced into Ontario in shipments of broom corn from Austria to the broom factory at St. Thomas. This was about thirteen years ago. The insects thus brought in, probably very few in number, established themselves in the corn fields between St. Thomas and Port Stanley.

So far as we can judge either all or nearly all of the millions of borers now in the Province are the descendants of these progenitors. Some think that there was a second introduction of the pest into the part of Welland county opposite Buffalo, and that this time they were brought in in table corn from the infested portions of New York State. There is some doubt in my mind about this.

There is now a heavily infested area within a radius of about 20 miles in all directions from Port Stanley, including most of Elgin county and the lower part of Middlesex. In this area from about 10% to 100% of the plants in almost every early cornfield this year was infested with one or more borers. In the worst fields every plant was attacked, and often a single stalk contained from 5 to 50 borers. Such fields were of course an almost entire loss. Further out the infestation gradually became lighter until at the end of a radius of about 30 or 35 miles from Port Stanley only 1% to 6% of the plants were attacked and most of these contained only a single borer. Beyond this main district the borers ceased to be found in most of the fields, and occurred only in more or less isolated small areas here and there.

The general distribution throughout the Province has been fairly well discovered by scouting during the last three years. The scouting in 1920 showed that the insect was present in Elgin, Middlesex, Kent, Huron, Oxford, Haldimand and Welland. In 1921 it showed that it was also in the following additional counties, Essex, Lambton, Perth, Waterloo, Wellington, Brant, Norfolk, Lincoln, Wentworth and Ontario. In 1922 scouting showed that it was in all the counties west of Toronto except Grey, Dufferin and Simcoe, and that east of Toronto it was in all the counties along the shore of Lake Ontario down to and including Northumberland. Thus, we see that the borer is now here and there throughout the main part of the corn-growing counties of the Province.

The method of distribution or spread in Elgin and Middlesex, where the borer is somewhat uniformly found, was evidently different from that in the rest of the Province, where it is only found in more or less isolated areas throughout the different counties. In Elgin and Middlesex the distribution was apparently due to the normal spread by flight of the moths in all directions from the original centre of infestation near Port Stanley, but in the other counties its spread cannot be accounted for in this manner but may have taken place in several ways:

First. By a long distance flight of moths, especially of fertile females. These long flights may have been due to the moths being carried by high winds, or to some fright which caused them to go much farther than usual, or to a sort of peculiar wanderlust instinct on the part of a few individuals.

Second. To borers being carried in shipments of table corn from infested areas. There is no doubt that, but for the quarantine measures, such cases of transportation would have been much more common.

Third. To borers accidentally getting on automobiles or other vehicles and being carried to their destination and then crawling off and managing to complete their life cycle on near by weeds or corn.

By whatever means distribution is brought about, one thing is certain, namely, that no matter what we may do, the borer will ultimately become distributed throughout the whole Province wherever corn is grown. There is also very little doubt that it will spread throughout all the corn-growing districts of Canada, and also of all North America, for investigation has shown that it can live under a very wide range of climatic conditions. For instance, in the old lands it thrives fairly well in Scandinavia, in Central Europe, in Italy and even in semi-tropical climates like Egypt.

How long it will be before it will be in every county in Ontario, and in every cornfield in these counties, no one can tell. I think, however, that it will be a good many years before it will be generally troublesome in most of the counties north and east of say, Oxford. I expect it to increase much more rapidly in counties like Kent, Essex, and Lambton than in counties like Halton, York and Ontario, for the reason that in the former counties corn is grown chiefly for seed while in the latter it is grown almost entirely for ensilage or fodder purposes. Where corn is grown for seed, the borer has a great deal better opportunity to increase rapidly than where the plants are used for feed purposes; because in the former case the stalks are not devoured but are to a very large extent left lying on the fields or wherever the husking was done; and consequently, as the borers pass the winter in any part of the stalk or in the cob, there will be excellent opportunities for their coming through safely compared with the opportunities afforded where corn stalks are put into a silo or are fed as fodder Moreover, it is vastly harder to get rid of the stalks and other corn debris by plowing in counties where corn is grown for seed; for the plow will not turn them down completely, and later cultivation will be more likely to bring them up again in spring. The significance of this lies in the fact that if we can manage to plow down and keep down all stalks, stubble and other pieces of corn infested by the borers the borers will perish, but if these are left above ground or dragged up again by cultivation the borers will be able to complete their life cycle and to change into moths and continue to increase.

Mr. Spencer will make this point much clearer to you when he is discussing control, but I think I have said sufficient to show that we may expect the borers to increase more rapidly in the seed-growing areas of the Province.

We now come to the last point, namely, can the insect be controlled? My

answer to this applies only to Ontario or to countries with a climate no warmer than Ontario, or in which there is, as here, only one brood a year. In such places the work done by Mr. G. J. Spencer for the Province, and by Mr. H. G. Crawford for the Dominion, strongly indicates that we are well on the way towards finding a satisfactory method of control. It is not well of course to speak too confidently, for there are often unforeseen difficulties which spring up and cause disappointment and disillusionment; but it looks as if already we have a satisfactory and inexpensive method of control for at least most of the counties of the Province, that is, for those counties where the corn is not grown for seed. Even for the latter, we have strong hopes that we see our way to reach the goal, though many details will first have to be worked out.

There are, moreover, some indications this year that certain natural control factors not yet well understood may from time to time aid us greatly in getting better results from our artificial control measures. Hence my message to you so far as the control of the borer is concerned is one of hope and not of despair.

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## CONTROL MEASURES FOR THE EUROPEAN CORN BORER.

G. J. Spencer, Lecturer in Entomology, O.A.C., Guelph.

Let me rapidly review the life history of this insect, which comes from a moth and passes through four stages in its life

(Illustrated from a chart.)

Egg-laying and the early work of the borer, demonstrated by means of corn stems. The ultimate resting places of the borers in the stem clearly pointed out. What are we going to do with it? To control this pest we must go about it according to the use we put the corn to on our farms.

1. *Is the corn grown for silage?* Then we cut the corn as low as the binder will allow and cut it as clean as we can. A binder will not cut so low in dirty fields as it will in clean fields. No one wants great masses of weeds in his corn sheaves, therefore it calls for clean cornfields. Moreover, since the borers attack all kinds of weeds that grow in among corn, in the fall the weeds themselves may be full of them. The binder removes at least 75% of the borers in a field; it would be a better average to say that it removes about 90%. All borers that go into a silo are killed; fermentation and heat kill them all. Thus the silo is about the single greatest factor in getting rid of great numbers of borers and of killing them surely.

2. *Is the corn grown for husking?* This is a much harder problem. More husking corn is grown then silo corn, and the borer prefers Flint to Dent. Flint fields are usually much worse attacked then Dent fields, probably because the Flint is softer in stem then the Dent, and the little borers enter it more easily. As before, the corn should be cut as low to the ground as possible, so as to carry off as many borers as possible. It is better to cut with a hoe than with a sickle.

What are we going to do with the borers in the Flint stems? After husking, the corn is put into the barn and fed as required. Some farmers shred it before feeding; this helps considerably and kills quite a number of the borers. A few men have their own cutting boxes and cut enough corn to be fed with the silage every few days. Or else they cut it and fed it dry; cattle eat it up better. This cutting-up kills many borers. But the chief danger with husking corn is that the stems may be only partially eaten, and they are then thrown out and the borers are still alive in these stems. The handling of the stems in the barn during the process of feeding tends to disturb the caterpillars, and they may

leave their burrows in the stems and may crawl away into cracks and crevices in the barn, only to turn into moths next year and to continue their damage. It has been proved that though some of the borers in the stems that are thrown out into the barnyards are killed by being trampled into the manure, still, a great number of them are not killed, and are then carried out into the fields where they turn into moths as described, and infest the next year's crop.

Where the stems are plentiful, it is better not to throw the stems into the manure, but to throw them separately into a heap or to load them on to a rack, and to haul them out into a field near by and to burn them, without letting the stock trample all over and scatter them.

All loose stems of corn around a barnyard should be gathered up and burned before the first of June each year, as that is the time that the borers start turning into moths. Also, all loose stems in the corners of the cornfield and any that may be lying around on the road sides, should be burned, as well as all cobs that are lying around in barnyards, because these too, may have borers right inside them.

3. We have thus disposed of the borers that are in the stems of corn after it has been taken from the field.

But the corn stubble and the loose ends of corn stalk (debris) and the weeds in the cornfield may be full of borers. There are enough borers left in these pieces to heavily reinfest a farm the next year, unless these also are destroyed. We have found that early fall plowing is about the best way to get rid of the borers that are left in the field. The earlier the field of stubble is ploughed the sooner do the borers come to the surface, and the cleaner the field has been ploughed the less hiding places are left for the borers during winter, and they then perish. The numbers that come to the surface are in almost direct ratio to the earliness of ploughing. That is, the later the ploughing the fewer borers come to the surface, and the more are left safely under ground where they do not die, but are protected during winter and come to the top next summer and turn into moths. It seems likely that spring plowing also may prove very effective. In any case, the corn stubble field should be ploughed, and if it cannot be done early in the fall (which is often almost impossible) then it should not be done late in the fall, but should be left until the next spring. And in every case, the ploughing should be done as cleanly as is possible, so as to turn under the surface every piece of stubble and debris and old cobs that may be lying on the surface. Clean ploughing leaves every piece of cornstalk under, and no shelter remains for the borers to crawl into when they come out from their burrows in the stems, and they cannot then turn into moths. They must have these shelters to pupate in, and if everything is safely underground, they are exposed to their enemies and to weather conditions, and are killed off or die.

Sometimes it is difficult to plough "clean." There are several factors that help clean ploughing.

(a) Rolling with a heavy roller as soon as the crop is off, will split open about 97% of stubble and will crush it down so that it can be easily turned under, without any long stiff ends sticking up; it also kills a few borers and helps the stalks to rot better underground because it lets water into them.

(b) Ploughing with a chain in cases where the stubble has been left long or the field is full of long weeds enables these to be readily turned under. Using a broad furrow plough with a skimmer is also very effective, and perfectly clean jobs have been obtained where the width of the furrow was changed so as to enable the teamster to get his plough right up alongside a row of stubble, and then to flop it over into the furrow.

Ploughing should be not less than six inches deep, and usually six inches is quite enough. It is not necessary to plough deeper.

Where a field has been badly infested and fairly thoroughly ploughed under, care must be taken not to use any toothed cultivator that will pull the stubble and cornstalks up again. This is important because if the stalks are pulled up again, the good ploughing is of no avail, and the borers will have good places to hide in when they come to the surface. We have found that a disc is the best thing to use after plowing, instead of any kind of toothed harrows or cultivator. Also, if at all possible, a disc drill should be used in putting in the crop that follows the corn. In no case should a hoed crop, or one that requires constant cultivation, be planted in a field of corn that was badly infested by the borer the year before. For this reason, it is unwise to have corn in the same field as the year before. This is sometimes done. The cultivation necessary for these crops, only pulls up the old stubble and lets the borer have good hiding places.

Where a field has been fairly well ploughed, but still has some old stalks and stubble lying on the surface, we have found that it will pay the farmer to hand pick that field. If the field is not too dirty, it can be picked at the rate of ¾ acre per hour per man, and it is well worth the trouble and expense. It is a good deal easier than picking rocks and stones off a field, as so many farmers have to do.

4. Where the crop has been allowed to remain all winter, as is sometimes done when hogs and cattle are turned in in the fall, it is sometimes a problem to turn the long broken off stalks and those lying on the surface of the ground, beneath the soil. In a case like this, the field should be rolled in spring or dragged with a heavy rail cross-raked into windrows and the refuse burned. Then it will plough down quite easily. Especially in parts of Essex and Kent counties where this practice is commonly followed, will the farmers have to take care that their cornfields are cleanly ploughed under in this manner or else the borer will do serious damage there.

5. Plots of sweet corn, whether grown for market or for home purposes, should be carefully cleaned up after the crop has been removed, or else they will serve as fresh places for infestation the next year. It is too often the case that such plots of sweet corn are left standing because they consist of only one or two rows and are not much in the way. But even these few rows can harbor a great many borers and since sweet corn is especially favored by them, all sweet cornstalks should be pulled up by the roots, piled in a heap and burned before the borers turn into moths, that is, before the first of June.

6. So far, I have showed how to get rid of the borer; but we can do a good deal towards avoiding it by planting the corn crop as late as is safe to mature it. The time for late planting will vary greatly according to the part of the Province in which you happen to be, but around Port Stanley, in Elgin county, it has been found possible the last two years, to plant as late as the 7th of June and yet mature the crop sufficiently to make excellent silage or to get good husking corn. This late planting means that the corn will be too short for the first borer moths to lay eggs on it, and the crop will be fairly safe. It has been proved that the earlier maturing the crop, the worse infested it becomes.

7. Again, we avoid having a crop of corn being badly infested by planting Dent varieties instead of Flint. Dent seems to be much more resistant than Flint; it stands up better under attack and also seems to have fewer borers per stem, than the Flint. As far as possible, then, *Dent should be substituted for Flint.*

8. Finally, it is possible to attract those moths that are flying early by planting a trap crop of at least ten rows of corn in the field. These trap rows should be put in at least a week ahead of the main crop even if it means special preparation of the ground for it, and the moths will be attracted to lay their eggs on them; then when the main crop is put in at least a week later than usual, it will have far less injury than it would otherwise have. About the middle of August, begin to cut those trap rows at ground level with a hoe and feed to stock, so as to destroy the borers in them, and the remnants should be raked up and burned.

Now in order to fight against this pest, which is threatening one of our chief crops, what are we asking you to do?

Nothing very difficult; nothing out of the way; nothing expensive in the way of spray mixtures. We are just asking you to change your ordinary crop rotation a little in so far as it affects the corn crop only. We are just asking you to:

1. Plant Dent instead of Flint if you can, cut it as low as possible and put it into the silo.

2. Plough down thoroughly all remnants of the crop that are on the surface of the cornfield, and to do this plough early in the fall if it is at all possible, or to leave it until spring.

3. If you cannot plant Dent for silage but use husking corn, we ask you to destroy by burning all parts of the corn stems that the cattle do not eat, instead of throwing them into the manure or leaving them lying around the barnyard.

4. We ask you to plant not less than ten rows of corn a week earlier for a trap crop and to plant the main crop a week later than usual. Then cut this trap crop early and feed it.

Plough clean; plant Dent and plant it late; use a silo if you can; clean up, clean up, clean up.

A Member: Is the worm we find in the cob the same thing as the corn borer?

Mr. Spencer: Usually in the fall you get the worm; it is larger than the corn borer and called "ear worm," and it is to be found in the ear alone, and not in the stem.

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## SUMMARY OF CO-OPERATIVE EXPERIMENTS IN WEED ERADICATION TO 1922.

J. E. Howitt, Professor of Botany, O.A.C., Guelph.

### Object of these Experiments.

These experiments were begun in 1911 with the object of gathering data from which definite statements might be made regarding the best methods of controlling the various bad weeds of the Province. New weeds have been added from time to time, and it is hoped to add more weeds each year until exact information has been obtained concerning the eradication of all the bad weeds in Ontario.

### Methods of carrying on Experiments.

These experiments were carried on by farmers on their own farms, following the directions supplied by the Director of Co-operative Experiments in Weed Eradication. Each year circulars outlining the experiments for the season were

sent out to the farmers throughout the Province. These circulars listed the weeds to be experimented with and invited all farmers who had any of these troublesome weeds on their farms to join in the experiments. Those who properly filled in the blank application forms attached to the circulars were supplied with directions for carrying out the experiments chosen. In the fall, blank forms were sent to the experimenters on which to report the results of their work.

## Summary of Results of the Eleven Years' Experiments.

The weeds experimented with were Perennial Sow Thistle, Twitch Grass, Bladder Campion or Cow Bell, Wild Mustard, Ox-eye Daisy, Field Bindweed, Wild Oats and Chess. The following is a brief summary of the results obtained from these experiments:—

### Experiment No. 1.

*The use of rape in the destruction of Perennial Sow Thistle.*

| | |
|---|---|
| Number of experimenters | 14 |
| Reporting complete success | 10 |
| Reporting partial success | 3 |
| Reporting failure | 1 |

### Experiment No. 3.

*The use of rape in the destruction of Twitch Grass.*

| | |
|---|---|
| Number of experimenters | 16 |
| Reporting complete success | 12 |
| Reporting partial success | 4 |

### Experiment No. 4.

*Method of cultivation for the destruction of Twitch Grass.*

| | |
|---|---|
| Number of experimenters | 11 |
| Reporting complete success | 4 |
| Reporting partial success | 6 |
| Reporting failure | 1 |

### Experiment No. 5.

*Method for the eradication of Bladder Campion or Cow Bell.*

| | |
|---|---|
| Number of experimenters | 9 |
| Reporting complete success | 5 |
| Reporting partial success | 4 |

### Experiment No. 6.

*Spraying with Iron Sulphate to destroy Mustard in Cereal Crops.*

| | |
|---|---|
| Number of experimenters | 24 |
| Reporting complete success | 21 |
| Reporting partial success | 2 |
| Reporting failure | 1 |

### Experiment No. 7.

*A method of cultivation for the destruction of Ox-Eye Daisy.*

| | |
|---|---|
| Number of experimenters | 3 |
| Reporting complete success | 2 |
| Reporting partial success | 1 |

### Experiment No. 8.

*A method of cultivation and cropping for the suppression of Field Bindweed.*

| | |
|---|---|
| Number of experimenters | 4 |
| Reporting complete success | 2 |
| Reporting partial success | 1 |
| Report not complete | 1 |

### General Results of the Experiments.

*First.*—Over eighty farmers have carried on successful experiments. The weeds experimented with were Perennial Sow Thistle, Twitch Grass, Bladder Campion or Cow Bell, Wild Mustard, Ox-eye Daisy, Field Bindweed, Wild Oats and Chess. Those who took part in these experiments profited by the experience. In nearly every instance they cleaned the field experimented with and demonstrated to their own satisfaction the effectiveness of the method tried, and at the same time their results furnished practical information for others.

*Second.*—As a result of the data gathered from these experiments, it is now possible to recommend with confidence definite methods for the eradication of such weeds as Perennial Sow Thistle, Twitch Grass, Bladder Campion and Wild Mustard.

### Recommendations made from the Results of the Eleven Years' Experiments.

The results of these eleven years' experiments would warrant recommending the following methods for the eradication of Twitch Grass, Perennial Sow Thistle, Wild Mustard and Bladder Campion.

*The Rape Method for the Control of Perennial Sow Thistle and Twitch Grass.*

Cultivate the field until about the middle of June, running over it frequently with a cultivator so as to keep the tops down and thus weaken the "roots." A cultivator with broad points should be used, which will cut off the Sow Thistle or Twitch Grass below the surface of the ground and not break up the root-stocks too much. About the middle of June apply manure at the rate of about twenty tons per acre (twelve good loads). Cultivate the manure in thoroughly and with a double mouldboard plow, slightly ridge up the land, making the ridges about twenty-six inches apart. On the ridges sow pasture rape (Dwarf Essex variety) at the rate of about one and a half pounds per acre. It is important that the right amount of rape be sown, for if too little is sown the stand will not be thick enough to smother the weeds; and if, on the other hand, too much is sown, the rape plants will be too crowded and not grow vigorously enough to keep ahead of the twitch grass or sow thistle. Sow the rape when the land is sufficiently moist to secure quick germination of the seed. If the rape is slow in starting the twitch grass or sow thistle may get a start in the rows and thus necessitate hand cultivation. Cultivate the rape every week or ten days until it occupies all the ground and makes further cultivation impossible. If, when the rape is cut or pastured, any of the weeds remain, the field should be ridged up last thing in the fall and put in with another hoed crop the following year. This has not been found necessary when a good stand of rape has been secured.

*Method of Cultivation for the Eradication of Bladder Campion or Cow Bell.*

Badly infested fields should be plowed deeply in the fall, and then cultivated and cross-cultivated with a broad-shared cultivator in order to break up and weaken the underground rootstocks. In the spring this cultivation should be repeated frequently enough to prevent the plant making any growth above ground until it is time to put in a hoed crop, which must be kept thoroughly clean in order to be effective. A well cared for corn crop, planted in hills so that

it can be cultivated both ways, has been found to give excellent results. Special attention must be given to hoeing out any bladder campion plants which may appear in the corn crop and which are not destroyed by cultivation. One fall and one spring's thorough cultivation, followed by a well cared for hoed crop, has been found to destroy practically all the bladder campion in a field, except in exceptionally wet seasons.

### Spraying with Iron Sulphate to prevent Mustard from Seeding in Cereal Crops.

Iron sulphate or copperas can be successfully used to destroy mustard in standing grain without injury to the crop.

#### *Preparation of Solution.*

A 20 per cent. solution should be applied. This can be prepared by dissolving 80 pounds of iron sulphate in 40 gallons of water. Iron sulphate is dissolved quite readily in cold water. The solution should be strained through a cheese cloth as it is put into the spray pump tank. This will remove dirt and small particles that are apt to clog the nozzles.

#### *Time to Apply.*

Apply on a calm, clear day just as soon as the first few plants in the fields show flowers. *It is very important to spray early.* If the plants are left too long, the treatment is not nearly so effective. If a heavy rain comes within 24 hours after the solution is applied, it will be necessary to spray again.

#### *How to Apply the Solution.*

An ordinary hand pump barrel sprayer, such as is employed to spray fruit trees, may be used, or a potato sprayer can be rigged up to do this work. Many of the up-to-date sprayers have a special broadcast attachment for spraying weeds. These are excellent for large areas, as they cover a wide strip at each round. Care must be taken to see that every mustard plant is covered with the solution in the form of a fine spray.

Iron sulphate may be obtained at any hardware store or from The Nichols Chemical Company, Toronto. In wholesale lots it is better purchased from this company, who can supply it much cheaper in large quantities than it can be purchased at local hardware stores.

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## A PRELIMINARY WEED SURVEY OF THE PROVINCE OF ONTARIO.

H. Groh, B.S.A., Department of Botany, Ottawa.

This report, although preliminary so far as the present survey is concerned, is not really the first in its field. The first surveys were made a good many years ago.

When Professor Panton became Instructor in Natural History at the Agricultural College in its early history, he gave a share of his attention to weed problems; and in 1887 issued his first publication in the college series, No. X on "Weeds." This was a small, three-page article which is of interest to us now for the announcement it contains of the recent appearance of the perennial sow thistle in the neighbourhood of Stratford, Ont. In 1893 his "Weeds of Ontario,"

gave the gist of the information collected from 1,015 replies to a circular enquiry as to the ten worst weeds locally in Ontario. In these lists 92 different weeds were named, and the 25 most frequently included were arranged in a separate list in the order of importance as being most frequently reported, as follows:

| | | | |
|---|---|---|---|
| Canada Thistle | 1,015 | Foxtail | 152 |
| Mustard | 666 | Pigweed | 126 |
| Wild Oat | 472 | Black Bindweed | 112 |
| Ox-eye Daisy | 463 | Milkweed | 98 |
| Burdock | 439 | Sorrel | 92 |
| Couch Grass | 401 | Purslane | 82 |
| Ragweed | 303 | Blueweed | 79 |
| Wild Peas | 288 | Mullein | 69 |
| Cockle | 241 | Mayweed | 60 |
| Dock | 232 | Lamb's Quarters | 55 |
| Redroot | 217 | Sow Thistle | 50 |
| Bur | 212 | Bindweed | 46 |
| Wild Flax | 173 | | |

A number of these names, as bur, redroot, etc., are rather indefinite. Several of the weeds standing high on the list, as burdock, for instance, would not impress us now as very seriously interfering with crop production. Some of our worst weeds were even then serious, but the placing of perennial sow thistle and bindweed at the foot of the list of 25 would not now be correct. Canada thistle was mentioned in every report.

For a number of years previous to 1900 also, a committee of the Ontario Agricultural and Experimental Union was engaged in collecting information as to the distribution and prevalence of weeds in Ontario, the outcome of which was the publication of "The Weeds of Ontario," under the authorship of Prof. F. C. Harrison. This bulletin gave a printed page and a full page figure to each of over 30 weeds found to be important in Ontario. Arranged in the order of importance indicated by the reports received, Canada thistle is again placed at the top, and perennial sow thistle and bindweed are considerably higher up, and other changes indicate an increase of certain weeds.

These surveys were very useful and are still of interest to us, but can scarcely be considered a reliable guide to-day. In the twenty odd years since the last survey, quite a change has taken place in the status of many of the weeds, and it ought to be of value to us to have a new survey of the situation. For the hard-headed practical farmer, work on methods of eradication, such as Prof. Howitt's co-operative experiments, may make a stronger appeal, but those of us who have to find an answer for the farmer's enquiries about weeds will readily appreciate the value of the best possible information on the present standing of the various weeds in the various sections of the country. We need to know just where they are, in which directions and how rapidly they are spreading, and what conditions are helping their spread. Some weeds are only in the East, others only in the West, and neither likely to invade the other's territory. Others, both native and introduced, are right now on the march, and changing their status rapidly.

Before presenting a report on the survey undertaken this year, it may be worth while to bring to your attention a piece of weed survey work in Manitoba which had something to do with suggesting the present Ontario survey. In Manitoba the weed problem, owing to the large areas farmed, and the large proportion of grain crop, is a very serious one, and in some respects, at least, is taken seriously. A Weed Act, the best I believe in Canada, is on the Statutes. Inspectors are appointed in practically all municipalities, and are under the direction of a Weeds Administrator. One of their duties in visiting the farms

in their territory is to report, on forms provided, for each quarter section, the presence or otherwise of each of a number of the worst weeds. The reports thus obtained have been utilized in the preparation of municipal weed maps, which have already proven of great service in directing the work against weeds. Through the kindness of Dr. Bedford, the very efficient Weeds Administrator, I was able to make an independent study of these data; and by determining the percentage of sections in each municipality from which a weed is reported, I have prepared maps of the province which show very clearly where the areas of most general infestation occur. A comparison of the maps for perennial Sow Thistle and Russian Thistle shows very strikingly how different weeds may be localized, although the general information usually available gives very little indication of the fact. Both these weeds have been in Manitoba since 1895, a long enough interval to have spread them uniformly over the province, if this is ever to occur, but a glance at the maps shows the greatest infestations of Sow Thistle to be mostly in a belt running diagonally across the province, through the heavy soils of the Red River Valley and northwestward, while Russian Thistle is a serious weed almost alone in the southwest part of the province where the soils are light, and drought has caused repeated crop failures. There is very little overlapping of territory, owing to the soil and moisture preferences of the two weeds, a fact which needs to be borne in mind when advising farmers.

The question naturally occurred whether it might not be possible to extend such a survey to other provinces. In Ontario the absence of weed inspectors made it necessary to seek help in other quarters, and for this preliminary attempt an appeal was made to the Agricultural Representatives who now cover practically the whole province. A circular letter and report form was accordingly sent out last summer, and the response has been very gratifying, forty-one representatives having been heard from. On this form nine of the worst weeds were listed, with a request that they be checked, if known to be in the county; others also to be added which were considered by them to be of prime importance, or most frequently enquired about by farmers. Including the nine weeds listed on the forms, forty-one weeds were mentioned in the reports. The nine were listed present as follows:

| | | | |
|---|---|---|---|
| Canada Thistle | 100% of reports | Bladder Campion | 88% of reports. |
| Couch Grass | 100% of reports | Field Bindweed | 85% of reports. |
| Perennial Sow Thistle | 98% of reports | Chess | 58% of reports. |
| Wild Mustard | 95% of reports | Russian Thistle | 27% of reports. |
| Wild Oats | 88% of reports | | |

It is evident that perennial Sow Thistle is now about as widely distributed among the counties of Ontario as even Canada Thistle. This, in itself, however, gives no indication of the prevalence or distribution of the weeds in the several counties. A further question asking for distribution by townships, when known, was designed as a slight approach towards Manitoba's localization of weed centres, but was not sufficiently answered to admit of compilation. It remains to be seen whether a way may be found to accomplish this important phase of the undertaking.

A question regarding the spread of weeds brought out some valuable information which cannot readily be tabulated. It would appear that many of even the older weeds are still spreading in some counties. Examination of the reports for comments, or other evidences as to which weeds are not considered the most serious, would arrange them in order of frequency so considered, somewhat as follows: Perennial Sow Thistle, Couch Grass, Wild Mustard, Canada Thistle, Field Bindweed, Ox-Eye Daisy, King Devil, Wild Oats, Ragweed,

Bladder Campion, Wild Carrot, etc. Reports of Wild Carrot are rather frequent from Western Ontario, and King Devil and Orange Hawkweed from Eastern Ontario, where rough pasture lands make it difficult to control them. Russian Thistle is the one weed among those listed which seems not to be occasioning any particular concern, even though present. Except in a few sandy areas, as in parts of Norfolk, and Eastern Ontario, it will probably not be an agressive weed with us.

Q.—Do I understand that you advocate the smothering of perennial bindweed with rape?

PROF. HOWITT: I will give you an outline of the method which we have been experimenting with for four years; it takes two years to complete. This is the method we find gives the best results: In the first place, in dealing with bindweed, it is necessary to get on the land as soon as possible in the spring. That appears to be one of the chief secrets of success. If the bindweed gets a chance to form, it shows green growth above the ground in the spring, and very soon stores up a great quantity of food material which the root sucks in underneath. Once the weed gets a start in that way it will stand a great deal of cultivation, and it is very difficult to deal with. The main thing is to get at it in the spring when the plant is weak from coming through the winter. One has to be after it all the time. If possible, use a double mould-board plow. Allow the frost to get at the root, and it will materially help to weaken the plant, and the use of the double mould-board plow will enable you to get the land drained so you can get on the ground early in the spring. It has been our experience here that the bindweed does not spread like a great many other weeds, but once it gets established it is a difficult weed to deal with and requires a great amount of labour.

Q.—Does spraying with iron sulphate apply to all kinds of mustard, and does it have any effect on the Canada thistle?

PROF. HOWITT: It has little effect, it would destroy the leaves that it reaches at the time, but has no permanent effect on the Canada thistle. Take some of the Western mustards: Some have very waxy leaves and the moisture does not stick to them, and you cannot get the same good results.

THE PRESIDENT: Is it on account of the physical nature of the leaf?

PROF. HOWITT: If it has a waxy leaf, it will not stick to it; it may be possible to add a sticker to get it to stick as in spraying fruit trees.

Q.—I thought it was on account of some chemical action in the material of the leaf.

PROF. HOWITT: Yes; but it has to stay there in order to have that effect.

Q.—I understand that the covering of the seed will preserve it for fifty years. Can anything be done to disintegrate the oily covering of the seed?

PROF. HOWITT: There is no way of washing the seed that is in the ground. Fifteen years is the time.

Q.—Is there any way to destroy the Canada thistle? It is one of the worst weeds in the West. If it could be sprayed with anything, it would be a great advantage.

PROF. HOWITT: In the West it is claimed they have had success in spraying the Canada thistle with sodium arsenic. If you are interested, write to Prof. Bolley, of the North Dakota Experimental Station.

MR. T. G. RAYNOR: My observation is that you can go to some sections of the country and pick out the weeds that are prevalent through those districts. When travelling through the country, by looking out of the car window, you can tell pretty well what standard of farming is carried on. In the dairy districts

the farmers keep most of the land seeded down with grass, it is rough pasture land, and that is just where the ox-eye daisy flourishes. In the early days one farmer sold timothy hay to his neighbour, and there was always a great deal of ox-eye daisy in that hay, and it was distributed in that way over nearly all of Quebec and the Eastern part of Ontario.

With regard to King Devil, to which reference has been made, it grows in pasture lands; these lands are not plowed up, and the weed gets in, and then the wind blows it here and there, and it spreads over these areas. If conditions were such that that weed could be plowed up and the land cultivated, King Devil would soon disappear.

The same is true of the Blue Weed. There are many limestone areas all over the country where it gets a start, and in the months of June and July you can see some fields in bloom with that weed. It does not thrive on cultivated land, except at odd times, when there is careless cultivation. It has given some farmers quite a lot of trouble, but the difficulty can be removed through the adoption of a system of rotation.

No mention has been made of Chickory, which we find in the ditches, on the road and in the fence corners, and it occasions little trouble in fields where there is good cultivation.

Mention was made of Wild Carrot, which I saw in this Province fifteen years ago. I predicted that this weed would go through the Province, and it has become very common, in both East and West. In the vicinity of Petrolia and Lambton, near the oil fields, you will see wild barley growing along the railway tracks. It is also to be found in Manitoba. I can take you to places where they are producing red clover seed, and on the roadsides, in the fields, and especially in the fence corners, can be seen Buckhorn. How does that weed get into another section? When the seed merchants in Toronto, London or Hamilton buy the clover seed from the different districts, in bulk, a lot of these weed seeds which are common to our meadows become mixed up with the clover seed, and are sent out to the farmers in the No. 1, No. 2 and No. 3 seed, and there is sufficient quantity to start propagation of some of the worst weeds we have. In that way we get such wide distribution.

Bladder Campion, one of the worst weeds we have, the hardest to eradicate, can go from one section to another in the locality through the exchange of red clover between farmers. I know where to go in the Peterboro district and get any quantity of Bladder Campion seed.

In districts where they grow grain all the time, as in Manitoba, we find Perennial Sow thistle, Wild Oats, Mustard, etc., dominating. You will remember the trouble you had with the Canada thistle, how it spread over the country and covered such a wide area. You will see places where the cultivation has not been thorough, in connection with hoe crops, where rotation has not been practised, one kind of grain has been grown for three or four years in succession, and the Canada thistle was able to get a good start. With the three-year system of rotation, the Canada thistle will practically disappear. As we come to understand this weed we can handle it better.

We have been told that when the Bindweed, or Wild Morning Glory, has been handled with sweet clover, and especially with alfalfa, if properly seeded down, followed with a smothering crop, like the cultivation of rape, results are very satisfactory.

The Perennial Sow thistle, we were told, would give the farmers of Ontario all sorts of trouble; but if the land is underdrained, and a short system of rotation adopted, and a broad sheared cultivator used to cultivate that plant at

the right time of the year, and it is followed up with a smothering crop, we can keep that weed under subjection.

HON. NELSON MONTEITH: I think this is a subject that possibly we might spend full time on profitably. When Mr. Raynor said there was no weed he was afraid of, it is quite evident he is not farming, because I think that weeds are one of the nightmares to the great bulk of active, everyday farmers, at the present time.

There is one point that was not emphasized as much as it might be, that is the drainage question. I have noticed, when one part of the farm has been artificially drained, and the other part naturally drained, that there is a great deal more difficulty in controlling the sow thistle on the portion of the farm artificially drained. But on flat lands, such as we have in the vicinity of Stratford, the Sow thistle has become a serious menace to agriculture, and a great many of the farmers have practically abandoned any attempt to control it. So I feel it is well to emphasize the trouble we are having with that weed.

MR. RAYNOR: When I said it was so easy to kill these weeds, I was speaking figuratively. One trouble about getting rid of the weeds in this country is that a great many farmers are operating a good deal more land than they can thoroughly cultivate, and if the land was divided into smaller holdings a great many of the weed problems would be solved in that way. There are many men who have investments in land, in this country, who do not look after the land, and it is occupied by a tenant, who has not the interest of the owner at heart, and in that way a large territory becomes neglected and a menace to good farmers. I believe we need have no fear of any weed, in any locality, if we attack it in an intelligent way. It means good, hard work, and can only be accomplished by the sweat of our brow; but it can be done, and is being done by a great many farmers throughout the country.

PROF. SQUIRRELL: I would like to ask what is the effect of iron sulphate on clover seeded in cereal crops?

PROF. HOWITT: In our experiments we have not noticed any injury to the clover seed beyond a little blackening of the plant.

The weed problem is largely a labor problem. I think every farmer should fear weeds, because we will always have the weed problem.

MR. BAKER: I think Prof. Howitt has struck the right note. The problem the last few years has been to get the necessary help to do the work, and I have come to the conclusion that if we do not get cheaper help, then we will have to adopt a system of partial summer fallowing to control the weeds. We should summer fallow the land until the first of July, and in that way can get a good stand of rape. We can use a four-horse, broad sheared cultivator. Another system to destroy twitch grass, Canada thistle and sow thistle, is to pasture the land up until June or the first of July, and attack those weeds in their weakest time, by plowing, and cultivating until it freezes up, and the next year there will be no weeds. You do not lose the whole year's crop by a system of partial summer fallowing, and the next year you will get a larger crop than if you had used the ordinary rotation. It has been my experience, with the present shortage of help, that it is impossible to clean the land in the hay meadows, of Canada thistle and twitch grass.

MR. RAYNOR: May I point out another source of danger; I believe the danger of the farmer purchasing noxious weed seeds at fall fairs, in the grain that is being offered, has been getting less; and wild oats are more or less disappearing. In connection with my work, I am examining samples of grain which come from different field crop competitions—largely oats—and a great many samples

have come in, under the present system of cleaning that the farmers have, with a considerable quantity of noxious weed life contained in them. Prizes were given, through the Field Crop Competition, for some of this grain that contains some noxious weed seeds. Because that grain received the prize, it is advertised throughout the country, and farmers think it is a pretty good kind of grain, and, if they do not examine it and detect the noxious weed seeds, then the weeds are spread over the country in grain that should be properly cleaned. It would be a good thing if we had a central place where that grain could be cleaned. Such a scheme is being worked out in the Province of Quebec with good results, and it is my conviction that we should co-operate together and get a central power cleaning plant in districts where farmers are advanced enough to take hold and properly clean the grain. In this way we can do away with spreading of such weeds as the Canada thistle.

Q.—At the present time we cannot get information with regard to the quality of the seed, without the vendor's consent, as to what is actually contained in a No. 1 sample of seed. You have to write for the report to the vendor of that seed.

MR. RAYNOR: That is right.

Q.—Cannot that be changed in some way? If we write for that information we should be able to get what we are actually sowing without sending a new sample because the report has already been given. I think we are entitled to that report, but cannot get it at the present time.

MR. RAYNOR: It would be better if the farmer had sufficient knowledge to be able to determine just what was contained in the sample before he bought it. There is a good deal of trouble about getting a report. It is just a matter of furnishing all the information of the different kinds of weed seeds contained in the sample.

THE PRESIDENT: The speakers have not mentioned some of the worst weeds we have to contend with. I do not believe ragweed was mentioned. At one time I considered that the most persistent weed we had was the bindweed, but I believe the small, unpretentious field ragweed is the worst weed we have, and it is spreading because of its persistency. I do not see any hope for it at all. You can keep it cut down along the roadside, in the field, and in the fence corners, but you cannot dispose of it, it costs too much money and time. The seeds of this weed are lying right on the ground, and there is no possibility of getting at them. I think Prof. Howitt, and Mr. Groh and Mr. Raynor, should give their attention to the problem of this ragweed.

PROF. HOWITT: You will find that you can get rid of the ragweed, by using an iron sulphate solution in spraying, especially on the roadside and in the lane, at a moderate cost, and it will not destroy anything else. The flowers are low down and it is hard to get at them; but if you can get under the ragweed plant when it comes up you can destroy it.

MR. RAYNOR: The ragweed is just as prevalent in other parts of the Province as it is around Uxbridge. Farmers get the ragweed seed in the red clover and do not worry about it a bit. It is a hard weed to deal with under certain conditions because the farmer is busy during harvest and cannot give it attention. Good results can be obtained by a short rotation of sweet clover or some other crop.

## RESULTS OF CO-OPERATIVE EXPERIMENTS IN AGRICULTURAL CHEMISTRY

S. Waterman, B.S.A., O.A.C., Guelph

During the past year under the direction of the Department of Chemistry, O.A.C. considerable experimental work in fertilizers was carried on, in connection with the Experimental Union.

Experience has pointed out that it is unsatisfactory to carry on a large number of small experiments with individuals throughout the country, so a plan of experiment was devised to include a number of plots on one type of soil in one locality. This type called the triangle experiment, permits the use of the three constituents, nitrogen, phosphorus and potash in twenty-one different combinations, with twenty per cent. variations. Thus there will be three plots on which nitrogen, phosphoric acid, and potash respectively; four with phosphoric acid and potash in different proportions; four with phosphoric acid and nitrogen; four with nitrogen and potash, and four with all three constituents in different proportions.

This experiment was laid down on the farm of Mr. R. D. Nodwell, of Hillsburg, with potatoes. It must be pointed out that this field had a heavy crop of sweet clover ploughed down the previous year and a cover crop of rye, ploughed down before planting the potatoes. This provided an excellent supply of organic matter and nitrogen for the potato crop, so that a result from the application of nitrogen fertilizer was not looked for. The results gave ample evidence that phosphoric acid and potash were all the fertilizing constituents needed in this soil. Plot 1. at the rate of 800 lbs. acid phosphate analysis 0-16-0 gave an increase of 49 bushels per acre over the unfertilized at a cost of 26 cents per bushel increase and a total profit over the unfertilized of $36.20 per acre. Plot 2 at the rate of 800 lbs. 0-13-4 fertilizer gave an increase of 99 bushels per acre at a cost of 12⅓ cents per bushel and a total profit of $86.71 per acre over unfertilized.

Attached is a sheet giving results of 14 plots, which showed a profit over the cost of fertilizer.

The plots where nitrogen was applied gave in a few cases a profit, but the cost per bushel of increase was relatively higher; and where nitrogen was present in large percentage a loss was indicated.

This gives, in our opinion, ample proof that if the farmer adopts methods of farming which permit of ploughing into the land at every opportunity cover crops, preferably legumes, he can keep up if not increase the total nitrogen content of his soil and avoid the purchase of any expensive nitrogenous fertilizers.

During the coming year it is the intention of this Department to further extend this type of experiment omitting those plots which have shown a loss in this year's work.

This type of experiment was also laid down in two orchards, near Brantford and Woodstock, with the co-operation of the Fruit Branch, Ontario Department of Agriculture. Unfortunately, both orchards were severely hailed and no results obtainable. It was noted, however, that those trees receiving phosphoric acid ripened the wood better and those receiving nitrogen have a better setting of fruit buds than the untreated.

Mention may be made of a series of experiments begun this year to determine the effect of liming and the use of acid phosphate on wheat followed by clover. These experiments were laid down on three farms in each of eight

counties, making twenty-four experiments in all. The experiment consists of four one-half acre plots—(1) untreated; (2) crushed limestone, 2 tons per acre; (3) crushed limestone, 2 tons per acre, acid phosphate 400 lbs. per acre; (4) 200 lbs. of 3-12-3 complete fertilizer.

The results of these experiments will probably solve the difficulty a number of farmers are experiencing in obtaining a good stand of clover.

| Plot No. | Per plot. | Yield per acre. | Unmarketable per plot. | Unmarketable per acre. | Marketable | Increase over check. | Cost of fertilizer. | Cost per bushel increase. | S. P. $1.00 per bushel. | Profit. | Equivalent fertilizer 800 lbs. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb. | bus. | | bus. | bus. | bus. | | | | | |
| 1 | 110 | 220 | 14⅔ | 27 | 193 | 49 | $12 80 | $0 26 | $49 00 | $36 20 | 0-16-0 |
| 2 | 140 | 280 | 14½ | 27 | 253 | 99 | 12 29 | 12⅓ | 99 00 | 86 71 | 0-12.8-3.2 |
| 3 | 110 | 220 | 15 | 28 | 192 | 48 | 15 68 | 32⅔ | 48 00 | 32 32 | 3.2-12.8-0 |
| 4 | 113 | 226 | 10½ | 19 | 207 | 63 | 11 77 | 18⅓ | 63 00 | 51 23 | 0-9.6-6.4 |
| 5 | 116 | 232 | 14½ | 27 | 205 | 61 | 15 17 | 25 | 61 00 | 45 83 | 3.2-9.6-3.2 |
| 6 | 107 | 214 | 12½ | 23 | 191 | 47 | 18 56 | 39⅓ | 47 00 | 28 44 | 6.4-9.6-0 |
| 7 | 103 | 206 | 8 | 14 | 192 | 48 | 11 26 | 23½ | 48 00 | 36 74 | 0-6.4-9.6 |
| 8 | 109 | 218 | 7½ | 13 | 205 | 61 | 14 69 | 24 | 61 00 | 46 31 | 3.2-6.4-5.4 |
| 9 | 112 | 224 | 9 | 16 | 208 | 64 | 18 13 | 28 | 64 00 | 45 87 | 6.4-6.4-3.2 |
| 10 | 88 | 176 | 8½ | 15 | 161 | 17 | 21 44 | 1 26 | 17 00 | 4 44 | 9.6-6.4-0 |
| 11 | 90 | 182 | 9 | 16 | 166 | 22 | 10 74 | 49 | 22 00 | 11 26 | 0-3.2-12.8 |
| 12 | 97 | 194 | 8½ | 15 | 179 | 35 | 14 18 | 40½ | 35 00 | 20 82 | 3.2-3.2-9.6 |
| 13 | 112 | 224 | 8½ | 15 | 209 | 65 | 17 61 | 27¼ | 65 00 | 47 39 | 6.4-3.2-6.4 |
| 14 | 94 | 190 | 9 | 16 | 174 | 30 | 20 93 | 69¾ | 30 00 | 9 07 | 9.6-3.2-3.2 |

Mr. Waterman: If any person is largely interested in the results we have accumulated you can receive all the information you may desire at our department. We are only too willing to give the results of our experimental work and assist in any way we can with this subject, which is an important question at the present time: The use of commercial fertilizer, and the use of other methods of building up the soil.

## CO-OPERATIVE HANDLING OF BEE SUPPLIES.

F. Eric Millen, Professor of Apiculture, O.A.C., Guelph.

I do not think there are very many beekeepers here this afternoon, so I am going to give but a brief synopsis of what the Ontario Beekeepers' Association did last year in the handling of bee supplies.

First of all, we did not worry much about handling bee supplies in a co-operative way until the last two years, simply because during the war time period our honey was selling for very good prices, and we did not need to worry about the cost of supplies because the product realized such a good return. People had not been educated to use honey as it should have been used, yet the Beekeepers' Association has done a great deal to improve the method of production, until to-day they are producing over 100 tons of honey a year, and are paying practically all of their attention to the production end of it, and have left the marketing end to take care of itself.

Last year, and this year especially, the price of honey dropped to pre-war prices, but we find that our supplies, and especially our honey cans, have not dropped greatly in price; the price of supplies has not corresponded with the fluctuation in the selling price The Beekeepers' Association are striving to see what can be accomplished in handling bee supplies in a co-operative way.

Beekeepers, like a number of other producers, have got the idea, and we believe it is right, that we can help ourselves very considerably by co-operation.

We feel that if we tell the beekeepers it would be a good thing to co-operate, without showing them some concrete example of what can be done, our chances of success would be very much less than if we were able, during one season's efforts, to show what could be done with regard to a saving in the cost of supplies. We also realize that, finally, our success must lie in the sale of honey. Until we can show something definite, we feel the chance of success is not great.

Last year the Beekeepers' Association decided to purchase honey cans and supplies for the members and, in brief, this is what we did: We purchased over 700,000 honey cans for the members of the O. B. A., also bee supplies. The Association turned over almost $95,000, with no earnest effort at all being made, and there was a saving of approximately $14,000 on the purchase of those supplies to the members of the Association.

At the conference which was held in December, we told the beekeepers what we aimed to do. We had circularized them several times during the season, and we believe we are in a position to go ahead in a co-operative way, and by March we hope to have our plans under way. In a few years we should be in a position to save a good deal of our overhead in the cost of selling honey, and in the purchase of our supplies.

It certainly opened the eyes of a great many beekeepers this year, when they saw what could be done in a small, limited way in the purchase of supplies, when we saved over $14,000. In other words, what we saved on supplies this year would have gone a considerable distance in paying the overhead for the selling of the honey.

Beekeepers are in a better position than some of the other producers, and it is appreciated that honey has considerable value, for the simple reason that the average beekeeper, like the average farmer, is a producer only, and not a salesman. But the time has come when we will produce all we can, and at the same time sell it in a co-operative manner—we will have someone to take care of the selling end, to let the public know the advantages of eating honey. That is why beekeepers must purchase their supplies in a co-operative way, and we believe the beginning we have made will lead to something greater in the future in connection with the selling of our honey.

PROF. SQUIRRELL: I would like to ask if that saving was due to the fact that you bought in large quantities?

PROF. MILLEN: Yes, that was the reason. The Association, of course, has no warehouse in which to store supplies, so we made arrangement first of all with the can company that all the orders should come through the Secretary's office, and he would forward the orders to the manufacturer, who, in turn, would ship.

All the money came through the Secretary's office, and we were responsible to the can company. We did that business without any overhead which, of course, normally would have to be taken care of in the regular way. It was just an effort to show what could be done.

MR. ROBERTSON: I do not think that beekeeping has had the prominent place it should have. Some fellow has said, "Why do you go up there; you are interested in fruit, and not interested in field crops or weed eradication?" But we certainly are interested in bees.

Two years ago we had a snow storm very much like to-day, and people asked themselves, what will we do with the sweet cherry crop? I said, "Do not worry about that, because the snow will keep the frost away; you fellows who

sleep in until ten o'clock in the morning do not know that the temperature has been 6° or 7° below frost." But we do worry. Two years ago we had early blossoming. If the blossoming is late, the insects which come in abundance during the early warm weather injure the blossoms; if we are to succeed with the trees when the blossoms are early we should have bees. When the blossoms come out for the two or three warm hours of the day the bees spread the pollen and fertilize the blossoms, and we should not complain if it means the loss of a little fruit, because it means that we will have an abundant crop. The California Fruit Growers are particular about planting certain varieties of trees which spread pollen and have a system of spraying, first apricots, then in some other part of the country sweet cherries, peaches, plums, and prunes later on. If we do not go around to these functions and see what others grower do, we will be at a disadvantage in competition with them.

Prof. Millen: In one of the bee journals there is an advertisement which states that the almond growers secured three carloads of bees for use in the almond orchards while the almonds were in blossom; that in the only way they can feel certain of a crop of almond nuts. Of course, the beekeeper looks at it from the honey end of the business. The amount of honey produced annually is worth almost $3,000,000 in Ontario, and the value of the field crops is undoubtedly worth a good deal more than honey that the bees gather—the California people pay a great deal of attention to it.

The President: The interdependence of our industries is of great importance; here we have the fruit men discussing beekeepers' problems, and the entomologist interested in the question of bees. We have a great deal in common. This has been an interesting and profitable discussion.

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## RESULTS OF CO-OPERATIVE EXPERIMENTS IN FORESTRY.

E. J. Zavitz, Provincial Forester, Toronto.

Twenty years ago a Forestry Committee of the Experimental Union forwarded the following resolution to the Government of that day:

(1) For establishing at the earliest possible date a School of Forestry, where instruction will be given in practical methods of dealing with forestry problems.

(2) For collecting accurate information from the municipal authorities as to the amount of lands unfit for agriculture in the settled townships of Ontario.

(3) For undertaking the practical reforestation of areas sufficiently large to afford forest conditions, as a demonstration of the utility of the work on these lands, which, from their surroundings, enjoy practical immunity from fire.

(4) For considering some means of adjusting taxation so as to encourage rather than discourage the preservation of farmers' wood lots.

A School of Forestry at the University of Toronto was established shortly after, and I will refer only to the fact that to-day the Ontario Forestry Branch has in its employ twenty technically trained forestry graduates of the School.

For the purposes of this meeting I will refer more particulatly to the results in reforestation in Southern Ontario which the Forestry Committee of 1903 had in mind.

The reforestation problem of Southern Ontario divides itself into two outstanding questions, namely: (1) The problem of improving private woodlands and reforesting private holdings. (2) The problem of reforesting the larger waste land areas situated in the agricultural portions of older Ontario.

That portion of Ontario, lying south of the Laurentian plateau, was cleared and settled for agriculture during the first half of the last century. In the southwestern peninsula, with its fertile soils and mild climate, there originally existed a magnificent forest type, similar to that of Ohio and southern Michigan, with walnut, chestnut, tulip and other valuable hardwoods represented.

In the remaining northern portion of older Ontario, the hardwood type was made up of maple, elm, basswood, beech, red oak, and ash, as the prevalent species. Throughout this southern region white and red pine frequently occurred in mixture with the hardwoods, or in pure stands on the light, sandy formations. The lands of this entire region have passed into private ownership and are negligible from the standpoint of timber production. The forest has disappeared and the farmer's wood lot, often badly culled, represents the only remaining woodland.

From the municipal returns we find that this southern portion of Ontario has less than 10 per cent. of woodland, with many townships showing less than 5 per cent. To a large extent these wood lots have been severely culled and opened to grazing, so that the character of the growth is very inferior.

The private wood lots of Southern Ontario, aggregating some three million acres, present a difficult problem. Legislation has been provided for the remittance of taxes. Educational propaganda through bulletins, farmers' institutes and clubs, has been undertaken; free planting material is being supplied, and yet the farmer's woodlot is not seriously considered by the majority of owners. The influence of this class of woodland on local wood supplies, on the question of protection to crops and buildings from wind and on the provision of shelter for bird life combine to make a solution of the problem imperative for the welfare of agricultural Ontario.

In Southern Ontario, where diversified soil conditions exist, there are few farms which could not advantageously support some forest crop. The writer believes that no education or propaganda equals the actual demonstration of forest plantations. Through the distribution of forest nursery stock during the past few years, plantations have been established in every county of older Ontario. Some five million plants have gone out and these demonstrations are just beginning to have their educational effect. The plantations are usually upon the poorer soils. Some of the more important ones are upon city watersheds, and upon blow-sand areas along the main highways where sand was continuously encroaching upon the road.

The larger waste-land areas, situated in the agricultural portions of older Ontario, present a problem, the solution of which depends upon municipal and provincial enterprises.

In 1909, a forest station, now comprising 1,800 acres, was established in one of these areas in Norfolk County in the Lake Erie district. This Norfolk sand formation, originally covered with pine and oak, was partially cleared for farming and then abandoned. Forest nurseries were established which provide planting material for distribution to other parts of the Province as well as supplying local needs.

Five hundred acres of plantations have been made at this station on blow-sand ridges, abandoned fields and in scrub oak lands. Tree species used in this work have been white pine, red pine, Scotch pine, jack pine, European larch, red oak, chestnut, and Carolina poplar. Small plantations, where soil conditions warrant, have been made with mixtures of the more valuable hardwoods.

Time will not permit a detailed description of the plantations, but the following shows the results on some of the oldest.

The Scotch pine and jack pine plantations are on bare sandy ridges; the red and white pine on sandy fields.

| Species | Age in years | Average Height in feet | Average Diameter in inches |
|---|---|---|---|
| Jack pine | 12 | 21.15 | 3.50 |
| Scotch pine | 12 | 19.61 | 2.72 |
| White pine | 11 | 12. | .... |
| Red pine | 8 | 9.42 | .... |

The results have been very gratifying, and investigation of the work by prominent Government officials and municipal officers from other regions, has assisted greatly in placing reforestation beyond the realm of academic discussion. The local effect is interesting as considerable skepticism existed regarding the initial plantings upon the blowing sand. At present our greatest demand from farmers for planting material is from the region about this forest station, proving that actual demonstration is the best form of education.

The nurseries at this station have been enlarged to a capacity of several million plants per year. We now have five acres in seed beds with an overhead, automatic watering system supplied from a 20,000-gallon tank with a four-inch main. At present these seed beds contain about seven million one-year-old seedlings, comprised chiefly of white pine, scotch pine, jack pine, and white spruce.

Believing that demonstration forest stations in Southern Ontario will greatly assist in solving our problem in this region, the Government has established three new stations which will be developed along lines similar to that of the Norfolk Station. Two years ago a start was made to reforest the sand dunes of Prince Edward County where several hundred acres of crown lands existed along the lake shore near Wellington. In this area experimental plantings with willow and poplar have been made on 200 acres. These dunes are moving badly and the above plantings were made as a nurse crop for protection, preparatory to the introduction of more important species.

During this last season, new forest stations have been opened in Simcoe and Durham counties. These new stations are located in districts which contain considerable poor land and where they should prove a stimulus to reforestation.

In addition to the provincial projects, numerous municipalities have become interested in reforestation. Two years ago legislation was enacted whereby co-operative arrangements can be entered into between municipalities and the province for the reforestation of municipal areas. The municipality purchases the land and the province undertakes the planting and management. These projects will embrace small ten-acre demonstrations along main highways as well as the larger problems of municipal waste areas. Under this municipal arrangement, Simcoe county has secured 1,000 acres of cut-over pine lands. During the last season the Forestry Branch organized a nursery station on this property and reforested over 100 acres as a start.

Fifteen townships have secured smaller areas of from 10 to 25 acres along main highways. Planting has been started on all the above plots.

A close student of the results of forestry practice in France attributes much of the success of private forestry to the early development in that country of state and municipal demonstration forests which became centres of forestry knowledge and inspiration.

Provincial and municipal forest stations in Southern Ontario will assist in securing a future wood supply; will provide demonstrations in forest planting and will assist in preventing futile attempts at agriculture on worthless soils.

Hon. Nelson Monteith : We should not let this subject of forestry pass without further comment. I think there is possibly nothing that will carry us into the future more than if we plant trees. It is the desire of nearly every individual who is humanly constituted to desire to pass on something worth while. I would like to emphasize the wonderful value that tree planting has in a sentimental way of attaching us to the old home, and to the farms upon which we have been reared. From our own experience locally, where we have taken advantage of the liberality of the Government in giving us trees, it has made people sit up and take notice; for instance, the pine plantations on much of the land that was unfit for agricultural purposes have become things of beauty, an adornment to the landscape, and have given a new interest in rural conditions. For that reason I feel that we should emphasize as much as possible the opportunities presented to men who are on the land. Land that is partially unfit for profitable occupation for agriculture should be planted out with pine trees.

Mr. T. H. Mason: I am very glad that Mr. Monteith has risen to stimulate our thought along this line. I felt that it was a mistake that this important paper presented by Mr. Zavitz should be passed so quickly, because it is really one of tremendous importance to the older parts of Ontario. I remember the strenuous fight we put up in connection with the proposed establishment of the School of Forestry in Toronto: we wanted it at the O.A.C. I think it should be here.

I have had the pleasure of seeing that proposition in Norfolk county, and it was a revelation to me. Farmers who are located in blow-sand regions, whose fields were a menace to their neighbours, and who set out a pine plantation eight years ago, have availed themselves of a source of profit and pleasure. I hope some of the young fellows here who may be living on land that is unfit for agriculture will take advantage of the Forestry Stations being established.

Mr. Groh: I would like to say that in the neighbourhood of my home, the original forest was burned off probably within the first ten years of the last century, about 1810. Woodlands have grown up that have furnished timber for my father's barn that was built in 1887, and that timber is about 25 feet in height. So that we have evidence that woods can be grown, and it is worth our while to plant trees.

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## RESULTS OF EXPERIMENTS IN CHICKEN NUTRITION.

W. R. Graham, Professor of Poultry Husbandry, O.A.C., Guelph.

The hatching and rearing of chicks while the snow is on the ground or before the green grass comes is, year by year, becoming more of a common practice. Likewise, the use of large brooders, where all the feed is taken to the chicks, is increasing. One can readily understand that feeds that are successful when the old hen and her chicks are at liberty, or when brooder chicks have a range over tender green feed, etc., may not be successful for the rearing of chicks confined to four walls with board or cement floors.

Winter chicks have been reared at the Poultry Department for over twenty years and many of the troubles that may occur have, at one time or another, been encountered.

The experimental trials were planned mainly with the object of a small

study in feed combinations as these might influence growth, mortality, and leg-weakness. The difficulty in ordinary practice is to keep the chicks on their feet and keep them growing.

Years of experience has demonstrated for us that a basal ration of equal parts of family cornmeal and white shorts suits the digestive tract, or little or no bowel trouble occurs with this ration.

A long pipe brooder house was used for the experiments which would give as nearly uniform conditions as to air, heat, etc., as one could expect.

Sixty Leghorn chicks were used in each of the first trials, all having a common grandfather, and the chicks from different incubators were thoroughly mixed. It was believed that sixty chicks were a fair number for a trial and that the general mixing would eliminate any influence from individual incubators. Considering the numbers used the general breeding was reasonably close.

In the following table no effort in particular has been made to study in detail the question of mineral salt, nor yet the question of the amount of fibre, etc.

There is room for some thought on feed combinations and their general effect upon growth, mortality, and general vigour.

| Ration. | Average weight at 6 weeks' growth. | Mash consumed. | Liver. | Eggs. | Tomatoes. | Milk. | Relation mash to growth. | Percentage mortality of chicks. |
|---|---|---|---|---|---|---|---|---|
| | Oz. | Oz. | Oz. | Oz. | Oz. | Qts. | | |
| No. 1. Corn meal, shorts and water | 3.9 | 556 | ..... | ..... | ..... | ..... | 2.75:1 | 15. |
| No. 2. Corn meal, shorts, milk, eggs, liver, tomatoes | 9.1 | 918 | 57 | 92 | 139 | 53 | 1.648:1 | 0. |
| No. 3. Corn meal, shorts, milk, eggs, tomatoes | 8.5 | 909 | ..... | 136 | 180 | 48 | 1.976:1 | 10. |
| No. 4. Corn meal, shorts, milk, eggs, liver | 9.13 | 919 | 41 | 137 | ..... | 54 | 1.796:1 | 6.6 |
| No. 5. Corn meal, shorts, eggs, liver, tomatoes | 5.1 | 850 | 51 | 85 | 111 | ..... | 2.96:1 | 6.6 |
| No. 6. Corn meal, shorts, milk, liver, tomatoes | 7.2 | 835 | 79 | ..... | 164 | 57 | 2.14:1 | 10. |
| No. 7. Corn meal, shorts, milk | 7.4 | 759 | ..... | ..... | ..... | 92 | 1.89:1 | 11.6 |
| No. 8. Corn meal, shorts, eggs | 7.1 | 644 | ..... | 193 | ..... | ..... | 1.74:1 | 13.3 |
| No. 9. Corn meal, shorts, tomatoes | 4.65 | 536 | ..... | ..... | 211 | ..... | 2.21:1 | 13.3 |
| No. 10. Corn meal, shorts, liver | 5.95 | 552 | 138 | ..... | ..... | ..... | 2.37:1 | 35. |
| No. 11. Corn meal, shorts, eggs, tomatoes | 6.4 | 601 | ..... | 89 | 119 | ..... | 2.03:1 | 23.3 |
| No. 12. Corn meal, shorts, tomatoes, liver | 5.75 | 643 | 68 | ..... | 126 | ..... | 2.32:1 | 20. |

All trials include the basal diet of one-half each of cornmeal and shorts.

No. 1 Lot was fed the basal diet of corn meal and white shorts and given water to drink.
No. 2 Lot was fed the basal diet, plus milk to drink, and the basal diet was alternately moistened with eggs, raw liver, and canned tomatoes.
No. 3 Lot was fed the basal diet, plus milk, eggs, tomatoes, but no liver.
No. 4 Lot was fed the basal diet, plus milk, eggs, and liver, but no tomatoes.
No. 5 Lot was fed the basal diet, plus eggs, tomatoes, and liver, but no milk.
No. 6 Lot was fed the basal diet, plus, milk, tomatoes, and liver, but no eggs.
No. 7 Lot was fed the basal diet, plus milk only.
No. 8 Lot was fed the basal diet, plus eggs only.
No. 9 Lot was fed the basal diet, plus tomatoes only.
No. 10 Lot was fed the basal diet, plus liver only.
No. 11 Lot was fed the basal diet, plus eggs and tomatoes.
No. 12 Lot was fed the basal diet, plus liver and tomatoes.

The feeding trials were continued for a period of six weeks.

There are so many possible and desirable trials to be made in feeding experiments with growing animals that, of necessity, many interesting things are omitted.

From the foregoing trials the feed with milk, eggs, liver, and tomatoes, gave the best results. This has been true in further tests, and, moreover, May-hatched pullets laid very well this season that have been confined all their lives and fed this diet.

Eggs, as a single additional feed to the basal diet, gave the best results.

Liver gave much trouble, not only in deaths, but in crooked breast-bones, and general conditions.

Tomatoes, though lacking in protein, gave better results than were expected.

The amount of feed taken is not in all cases a good indicator of the growth or mortality.

A MEMBER: Would sprouted oats take the place of tomatoes ?

PROF. GRAHAM: No, not very well. We tried sprouted oats and cod liver oil as well as a good many other things, but apparently sprouted oats will not do. Sprouted oats will, however, take the place of tomatoes fairly well after the chicks are three or four weeks old; previous to that they will not do. If you could get rid of the hull it might help some.

Q. : Will skim milk take the place of buttermilk?

PROF. GRAHAM: It is all right if it is sour.

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## PROLIFICACY IN SWINE.

WADE TOOLE, PROFESSOR OF ANIMAL HUSBANDRY, O.A.C., GUELPH.

The average litter is variously estimated at from seven to eight pigs, and yet breeders know that some sows will produce eleven or thirteen pigs and raise them well, while others seem content with three or four. Some say they like a certain breed because the females produce large litters, and these same men condemn other breeds because they believe they throw comparatively small litters. Believing that some authentic information was necessary, the Department of Animal Husbandry at the Ontario Agricultural College started investigational work to reveal the average number of pigs farrowed by sows of seven different breeds in Canada. In the fall of 1920 an investigation of 701 Yorkshire litters and 1,034 Berkshire litters was made, when it was found that the former averaged 11.22 pigs and the latter 9.02 pigs per litter. Both figures appeared rather high, and the work done opened up a wider field for investigation, so two men in their senior year in 1921 were given the problem of investigating 800

litters of each of seven different breeds, viz.: Yorkshire, Tamworth, Berkshire, Hampshire, Chester White, Duroc Jersey and Poland China. This investigation covered the number of litters farrowed in one year. The 5,600 litters farrowed numbered 49,400 pigs or an average per litter of 8.82 for a twelve-months period. This average is higher than most people would believe, and serves to place pure-bred swine in a better light than many see them. Farmers are prone to complain of low fecundity in highly-bred stock. But when 5,600 litters of pigs from pure-bred sows and pure-bred boars of seven different breeds average all told 8.82 pigs per litter the pure-bred pig, so far as fecundity is concerned, stands above criticism, and while some breeds are more productive than others, it will be noticed from a summary of results that each and every breed has a creditable record.

The data from which the results were obtained were secured from the Canadian Live Stock Records, Ottawa. When a breeder makes application to register the progeny of pure-bred sire and dam he must furnish:

1. The number of pigs in the litter.
2. The number of males in the litter.
3. The number of females in the litter.
4. The date of farrowing.

These application forms furnished the source of the information, which is reliable. The following table shows the average number of pigs per litter.

| Breed. | Number of litters. | Average per litter. |
|---|---|---|
| Yorkshire | 800 | 10.2 |
| Tamworth | 800 | 9.4 |
| Berkshire | 800 | 8.3 |
| Hampshire | 800 | 8.2 |
| Chester White | 800 | 9.3 |
| Duroc Jersey | 800 | 8.4 |
| Poland China | 800 | 8.0 |

This table is of interest for several reasons. Besides proving that each and every breed is fairly prolific, it shows that the bacon breeds are in the lead with the Yorkshire at the top. This is important in Canada where the bacon hog is most in demand. It is well to notice, too, that the Berkshire and Hampshire breeds, which are sometimes considered as in between the strictly speaking bacon type and the pronounced lard type are, when grouped together, lower in fecundity than the three lard breeds, viz, Chester Whites, Duroc Jerseys and Poland Chinas, while the Poland, with an average of 8 pigs per litter, stands at the bottom.

Some think that the Canadian climate is too severe for best results in swine. This may be so, but the results of investigational work covering 85,000 litters in the States, showed a litter average of 8.17. While not so many litters were studied in Canada, our average of 8.82 pigs per litter looks favourable to Canada.

Other interesting information was revealed in the work. The percentages of males and females in the 49,400 pigs studied ran 48 per cent. males and 52 per cent. females, showing that the balance of the sexes is fairly well controlled in nature.

By tabulating litters according to months, it was found that the maximum litters were farrowed in the months of January, March, September and October, but that the month of farrowing did not seem to have a very marked effect upon the number of pigs actually farrowed. Undoubtedly if this had been followed up, the month would have been found to have had a very marked effect upon the percentage of pigs raised, for while the market would be benefited

by a continuous supply, a great deal more difficulty is experienced in raising winter litters than in handling young pigs in warm weather. However, it is shown that sows farrow just as large litters in winter as in summer. Condition at time of service has more effect upon size of litter than time of farrowing. Sows should be active, rugged and preferably gaining in flesh when bred. There does seem, however, to be more or less falling off in size of litters farrowed in November and December. This is likely due to the fact that the sows are bred in the heat of summer, and possibly when grain is scarce and pasture short. They are likely in low condition when bred.

The results show that while all of our recognized pure-bred breeds are throwing good litters, the bacon breeds are leading, and an average of from one to two pigs per litter increase is important. Pure-bred swine are prolific. Canadian sows can and do produce large litters. Possibly there is more in strain than in breed in regard to size of litter, but the average is in favour of the Yorkshire and the Tamworth.

MR. RAYNOR: I was wondering if the average age of the sows, when this survey was made, would not be quite a bit older than the average you would find in ordinary farm conditions? I know, as a matter of fact, through the country that a great many young, immature sows are bred. Would it not be a good thing to have a survey of the average conditions over the country. Is there anything in the way the sow has been kept that has to do with controlling the size of the litter?

PROF. TOOLE: You might do something in that regard, Mr. Raynor. Of course these sows, covered by this survey, were kept just a little better than the average grade sow, I presume. Our object in this work was not to set up the average size of litter of all classes of pigs; rather a comparison of the various breeds of the pure-breds. I think the raiser of one particular breed is just as careful how he handles the sow and boar, as the breeder of another breed. It would be interesting, I agree, to get the average of a large number of just ordinary grade, and promiscuously bred, sows. Whether or not these will be older sows, I do not know. If they were, it is more than likely that the increase of the litter would be a little over that of young sows; that is, it is generally thought that a mature sow is more likely to throw a large litter than the young sow. The effect of the boar, to my mind, does not count, but I may be all wrong. The boar whose seminal fluid is productive at all, it seems to me, has done his part; if that is fertile at all it will fertilize the total number of eggs—if you wish to call them eggs—in the womb. It is my contention that the size of the litter is controlled by the particular sow, although her ability to produce a large litter may, to some extent, have been handed down from the boar, her sire.

T. H. MASON: I have had a little experience along this line. I remember one of my neighbours a good many years ago purchased a boar which was a pure-bred Berkshire. There was no other boar in that immediate neighbourhood. He was only eight months old and was given a tremendous patronage, and, as a consequence, I do not think there was a litter from that boar that went over four. There was another case, a few years ago, where the owner of a boar was an extremely poor feeder, he kept the boar half starved, and the results from that boar were very poor. The litters were not only small, but of extremely low vitality. I am satisfied that the boar has a controlling influence.

I commend the work carried on in connection with this survey. It is my experience, with regard to the Poland China breed, which is almost entirely confined to the south-west corner of Ontario, which is the corn belt, that the average litter is not as large there as in the counties farther north. The Chester

Whites are very small in numbers in Ontario, but in the Province of Quebec and in the Maritime Provinces, where there is no corn feeding of hogs, you will find a great number of Chester Whites, widely distributed. Perhaps the section of the country, and what the animals are fed, have some effect. As far as the Duroc Jerseys are concerned, I think perhaps 90 per cent. of the registrations are from the West, where oats and barley are common feed grains.

As far as the hog proposition is concerned, the bacon trade is of the first importance, and the Yorkshire-Tamworth strains of the Berkshire—crosses of the Yorkshire and Berkshire and Tamworth and Berkshire—all give very satisfactory results.

PROF. TOOLE: With regard to the young boar, and the thin boar, I do not want to mislead you into thinking that you can use a young boar without injuring his virility, nor do I want to lead you to believe that you can starve a hog and get large litters. With respect to the starved hog, no doubt the spermatazoa was there but a very small percentage of it was alive, and that is the reason for a small litter. I would call that pig a non-breeder, almost. The same thing would be true with regard to the young boar. If that boar had been allowed to rest for two or three months he would have come back and likely been all right. The boar should be in good condition, getting plenty of exercise and well fed. The size of the litter does not depend very much on the boar, in my estimation; it is more dependent on the condition of the sow.

We find that this is true in connection with sheep. If the ewe is in good condition before being bred she will produce a larger lamb crop. You should breed hogs that are suitable to your locality.

T. H. MASON: Did you ever observe in your experience that if one ram is with a large number of ewes, in the first part of the copulation period you have a very large percentage of twins, and, as the season advances, there is a slackening off in the number of twins?

PROF. TOOLE: That has not been my experience; it is likely there would be a slackening off in pasture at the time of breeding.

MR T. H. MASON: My theory is, whether it is right or not, that the percentage of twins is larger from the first service by the ram, and, with the later services there is a slackening off in the numbers of twins.

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## THE RURAL CREDITS ACT

G. A. BRODIE, B.S.A., AGRICULTURAL DEVELOPMENT BOARD, TORONTO

I am going to speak with regard to a subject that is perhaps not very familiar to most of the people in this audience, and to those in this country; nevertheless, it is one that has been practised for a great many years in European countries, going back for perhaps 150 years, and it has been practised there very largely for the past 50 years. I might say, as well, that I believe countries, generally speaking, who have practised this Rural Credits scheme to the greatest extent have advanced the most rapidly up until the time of the war.

Now, in this Province, it is almost a new thing. In Manitoba, Alberta and Saskatchewan, they have already established the Rural Credits scheme, but we in Ontario have only nicely commenced, having had about one year's experience to date. So we are quite young. I believe this question was discussed here a year or two ago in this building, and you considered that the time was ripe for the Rural Credits scheme to be brought about; and it has been

brought about. There has been a great deal more need of this scheme than was anticipated because the Board thought, in the first place, that if they loaned about a million dollars during the first year it would be a pretty good showing. For your information I want to say that up to the present day there has been three times that amount loaned throughout Ontario, and it will be of interest for you to know that we have had applications to the extent of over $6,000,000 up to the present time. The reason for the great difference between the amount asked for and that actually paid out, was that many asked for loans for periods which the Board could not grant, and so could not come under the Act, and therefore the applicants could not get their loan.

I believe this audience knows that rural Ontario is not prospering as much as she should; and you also know that the great need is "full" co-operation. That is one of the co-operative schemes we have at the present time, which the people are taking hold of, and which I believe is going to count a great deal for the future prosperity of Ontario.

Before I speak of the two loan systems, I want to say something regarding banks, because there is a great misunderstanding throughout this country in that respect. You are aware that the banking institutions fought this organization very hard at first. I think, at the present time, there is really no thought of making war with this institution, because the banks realize, as we all do, that the time has arrived, just the same as in days past when the old stage coach had to give way to something better; so the banking system had to enlarge so as to give service to all the people, to the greatest extent possible.

Our system does not conflict with the banking system of this country, to any great extent—to almost no extent at all —because the banks cannot make loans on farm property, taking a mortgage as security, neither do they lend to the farmers for a period greater than three months. Our system, under the long term loan, covers a period of twenty years, and the short term for twelve months, with the privilege of renewal under certain conditions. So that the two systems do not conflict and our system comes in to fill a long felt want, and is being greatly appreciated by the people who are practising it.

I will take up, in the first place, the long term loan. These are loans made to farmers for periods of twenty years on what is known as the amortization plan, which means that the interest and a certain amount of principal is payable each year, making all the payments equal throughout the twenty years. Those payments are at the rate of 87.18 per thousand loan, or 8.7 interest on the amount of the loan will discharge the whole encumbrance in 20 years.

You might not think that at the present day there are any number of farmers in this country who are paying 8 to 10 per cent. interest on their transactions. That is pretty much in the north country, not so much in this part of Ontario. When people have the advantage of the twenty-year system, with interest at 6 per cent., it is a wonderful chance to make themselves more prosperous.

Just to give you an idea how the business is carried on in the office, I will follow it through in order to give you a better idea. Generally speaking, we get a letter from some person interested, and in answer to that letter we send an application form which simply asks a great number of questions. In answering these questions we obtain information that enables us to know pretty nearly the whole situation of the party requiring the loan. If we consider the application favourably we ask for $12. This is the inspection fee, which is charged throughout the whole of Ontario at a flat rate, and this pays the expense of having an inspection made. There are certain qualifications: The applicant must be

21 years of age, three years resident in Ontario, three years' experience in farming, a naturalized British subject, and of good character.

The purposes for which we will grant a loan are five in number: First, the purchase of a farm; second, to erect farm buildings, third, to pay legacies under a will; fourth, for tile drainage. For these four purposes the Board loans up to 65 per cent. of the value of the property according to our Inspector's valuation. The fifth purpose is: For the removal of an encumbrance, for which the Board loans only up to 40 per cent. of the value of the farm according to our Inspector's valuation. We have about 30 Inspectors in Ontario who do our work; they are situated throughout Ontario, and we try to send the inspector who is situated nearest to the property, or, on account of railway connections, can make the inspection to greatest advantage.

As soon as we have our Inspector's report, the Board sits on that case, and that party is granted the loan in full, or as much as the Board can grant; or it is not granted at all, as the case may be. When the loan is made, it is passed on to our solicitor.

The Board found it necessary, instead of having solicitors scattered over the whole of Ontario, to have a firm of solicitors in Toronto do all the work, because we found that throughout Ontario some solicitors were very moderate in their charge, while others charged an exorbitant rate, thinking the Government was paying it, perhaps. Our solicitors charge us $10 for a loan up to $2,000; $15 for a loan between $2,000 and $6,000; $20 for a loan from $6,000 to $12,000—$12,000 being the maximum amount we loan. On the average our fees have been $23, that includes lawyer's fees—total disbursements. So that you will see our rates are kept pretty well within the mark.

I might say we have had about 4,000 applications for loans throughout Ontario. There has been little advertising done by the Department, because, as the President has already told you, the business has grown to such an extent we can hardly handle it at the present time, having had to increase the office staff considerably from time to time. To give you an idea how it has grown: During the last three months we got applications to the extent of nearly half a million dollars per month. So you may judge whether this system is necessary at the present time.

Perhaps I should have stated the reasons for this great change, but I think it is known to every person in this audience. Before the war we had money available pretty much for this purpose; during the war the retired farmers who had money to loan on mortgages found they could loan their money to better advantage by investing it in Victory Bonds. This made funds scarcer. There is a crisis in this country to-day because people who have money to loan are not willing to advance money on mortgages, and I do not know what the people in this country would do were it not for our organization.

The short-loan system is one whereby we make loans up to $2,000 on the security of a note only. It requires a certain amount of machinery for this short-loan association, and it is that measure that is interfering with the development of the organization, to a considerable extent. There are thirteen short-loan associations operating at the present time throughout Ontario, and I believe they are giving perfect satisfaction, as far as I know.

Regarding the machinery to get this organization in operation. In the first place, it is necessary that thirty farmers, as a minimum, should join together by paying the $100 membership in the Association; ten per cent. of this only is paid in cash; the balance is held on call in case there should be any losses. When these 30 members have subscribed that amount, they then go to the

Township Council who are asked to subscribe for half of the amount; that is, if 30 farmers only are in the Association, the 10 per cent they pay will be $300; the Township Council, then pays over $150 and are responsible for the 90 per cent. which is on call. When they have subscribed that amount, then the Government are asked to subscribe for a like amount; just doubling the security of the farmers. The Government appoint two directors to look after their interest; the township council appoint two directors, in each case for two years; the thirty farmers appoint the President, Vice-President, and one director. That is seven men who constitute the Board of Directors, to whom all applications are made for loans. They select the Secretary-Treasurer, either from among themselves, or their members, or an outsider, as they see fit. And that is the whole Board to whom parties requiring loans make application.

The person wishing a loan will make application on a certain paper for that purpose. He also furnishes a statement of his financial standing to the Board, and the Board either grant the loan in full, or grant a portion of it, or decide not to grant it at all, as the case may be. You will understand that the applicant must have security before he can get the loan, in any event.

The men chosen as directors are the select men of the whole township, and people applying for loans, even if they are inexperienced, can count upon these directors for advice. For example, we often find a splendid young farmer who is apt to go a little too fast, who wants a little too much money; these seven directors are supposed to be men, not only able to make loans, but to act in an advisory capacity. It is wonderful the way in which they are helping the whole farming community.

I might say that the ten per cent. subscribed by the farmer is not used in any way for loans, but that is bound to be invested in bonds, or debentures, something that is entirely safe, and the farmer gets a return for that investment. There is no free gift of money in any case to join this Association.

One per cent. is allowed these Boards for operating, and that will be ample to pay the secretary, and any other expenses in connection with it, and even provide for an over-plus that may be used for a sinking fund, if so desired.

This scheme of Rural Credits is going to elevate the farming community, I am quite sure, and the whole history of the country has been that where the farming community is thrifty and progressive there is no danger with respect to the national life.

Our system to-day is reversed from the old system; the banks have been paying three per cent to the depositor, and the money has been sent to the big centres for commercial purposes, and sent out of the country.

I think we are getting to the proper foundation, building on the right ground, in trying in this way to make the farmer more prosperous.

J. COKE: It seems to me there is one phase of the credit situation that should be pointed out at this time, and that is that the economic status of the agricultural industry has changed very materially within the last five years. The purchasing power of the farmer is greatly reduced; that is to say, that the products which he has to dispose of are selling at almost pre-war prices, while the prices which he has to pay for products which he buys are still at almost post-war prices. Now, when prices of farm products took a downward course we naturally thought the farmer would be the first to be hit, and the other people would soon be in a similar position. However, that has not worked out. While we are moving slowly towards the adjustment of other prices, still the farmer is in the position where he has to go out and do something himself.

I would like to suggest that the farmer can help solve his present economic

condition by cutting expenses at home—the cost of labor, the purchase of equipment, etc.—and do those things himself which he might, under ordinary circumstances, hire a mechanic to do; for example, repairs to buildings. In this way he can save the cost of hiring expensive laborers to do it for him. Some say that is not possible. Well, the situation is serious anyway, and you have to cut expenses to the bone.

That brings up this question also; the costs of production, or operation, on the farms, and the prices which the farmer sells his products for. The Credits Act is for the purpose of permitting the farmer to pay his debts already incurred; not for the expansion of his business. I think that is fundamental in "Credit" at the present time. Present economic conditions do not warrant expansion of the farming business. Some people even go so far as to question whether farmers can maintain the present state of production.

Mr. Brodie emphasized the fact that the Rural Credits institution as developed in Ontario is not a charitable institution. That is also fundamental, because too many people seem to get the idea that any Government scheme is a sort of charity, and they expect loans on a basis different from that which they are able to secure loans from the bank or other institution.

The second fundamental thing about the basis of "Credit" is that only the most efficient men can get credit. That is to say, when you apply for credit to a bank, or Rural Credit institution, or local loan association, you have absolutely to be able to convince that association that you have the ability to take that loan and invest it for production purposes, and be able to pay back principal and interest at a specified date.

It seems to me that the economic situation of the farmer, and the fact that his credit needs are for the purpose of "carrying over"—not for expansion of business—and the fact that the farmer must be impressed with the fact that it is strictly a business proposition, that he has to come before the Board and make an unreserved statement of his assets and liabilities before he can expect any credit from this organization, are fundamental to the success of the Rural Credits scheme.

Mr. Murray: For the past three or four years I have been intimately associated with this work in the province of Manitoba. From my experience there, I would say, as long as there is a careful supervision and careful distinction between the essential differences between the short-term and long-term loans, that the Rural Credits scheme can be worked very satisfactorily indeed. By that I mean,during times like these you will find a great number of men who will accumulate short-term loans with the idea that, as time goes on, if returns are not sufficient, they will convert them into ordinary mortgages running for five years, or into the loan granted from the Agricultural Board for a term of twenty years. It quite often happens that something may transpire between the time when the short-term loans accumulate and the time for which one of the long-term loans has been granted, to prevent him getting the long-term loan he requires; consequently he is loaded up with short-term loans, and is in a very embarrassing position. I think, if the Association keeps that distinctly in mind as they are granting credits, as regards converting the short-term loan into the long-term loan, there shall be no danger of any Board granting more credits than they should.

Then, again, the contention has been put forward that the short-term loan conflicts with the banking business. As far as I have been able to find out, from my experience, the short-term loans are filling a purpose that the banks have not seriously catered to. The terms for which our loans are granted extend

anywhere from 12, 18, 24 months, and do not have to be repaid until the purpose for which the loan was granted has been fulfilled. In that way, the Association has been of great benefit to farmers who require loans to purchase stock, etc.; and they allow the farmer to hold the stock until he can get satisfactory returns. That is of considerable importance, because the period of three months frequently granted by banks, with the uncertainty of a renewal at a later date, may place the farmer in a disadvantageous position.

We will be only too willing, at the office, to render any assistance to any group of farmers, in any township, where they wish to go ahead with such an organization.

Q.—What percentage of interest is charged on short-term loans?

MR. BRODIE: Six and a half per cent.

MR. AMOS: What provision are you making to prevent a party getting loans from further sources, and embarrassing your organization?

MR. BRODIE: Their financial statement will include everything regarding it, and, as the directors are local men, they have a chance to look at the case. Any person who applies for a loan, if his case is not familiar, it will be laid over for further consideration.

MR. AMOS: Supposing another source of monetary help is available to that party, and he secures it to his final embarrassment, and the whole thing goes into insolvency, how can you collect?

MR. BRODIE: The Board protects itself, in the majority of cases, by having a lien note as security, so that if the security is at any time impaired they can register their lien, and they give the debtor the first chance to act in accordance with the process of law.

PROF. FAY: Have there been any repayments? Have there been any extensions under the short-term loan?

MR. BRODIE: Yes, there have been a large number of repayments. The first association was formed about February 1922, and a great number of the applicants have had their payments extended. The payments have been quite satisfactory, under present conditions.

THE CHAIRMAN: As Mr. Brodie has said, the Government has not been advertising the matter because it has been getting a great deal of business.

MR. RAYNOR: Does this Board foster the insurance part that has been practised in connection with the Ottawa branch, with regard to some system of life insurance?

MR. BRODIE: No, we have no insurance in connection with this scheme.

THE CHAIRMAN: In connection with the long-term loans, are the requirements the same as in other companies?

MR. BRODIE: The buildings must be insured up to the full insurable value, and we hold these policies the same as a mortgagee would hold them. Every precaution is taken so there will be no loss to the association, or to the private individual.

Q.—Do you take life insurance as security?

MR. BRODIE: It can be taken as security.

# Ontario Department of Agriculture

EIGHTEENTH ANNUAL REPORT

OF THE

# ONTARIO
# Vegetable Growers' Association

# 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
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1923

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*To His Honour*, HENRY COCKSHUTT,

*Lieutenant-Governor of the Province of Ontario.*

MAY IT PLEASE YOUR HONOUR:

I herewith present for consideration of Your Honour the Annual Report of the Ontario Vegetable Growers' Association for 1922.

Respectfully yours,

MANNING W. DOHERTY,
*Minister of Agriculture.*

TORONTO, 1923.

# CONTENTS


| | PAGE |
|---|---|
| Officers for 1923 | 5 |
| Financial Statement | 5 |
| Annual Convention | 7 |
| President's Address: G. H. Poad | 7 |
| Report of Secretary-Treasurer: J. Lockie Wilson | 9 |
| Early Celery Culture: C. E. Post | 13 |
| Artificial Heating of Hot Beds without Manure: Prof. A. H. MacLennan | 17 |
| Possibilities of Cold Storage for our Vegetable Products: Andrew Fulton | 22 |
| A New Strawberry | 25 |
| Selection and Saving of Seed: E. J. Atkin | 26 |
| The Potato Council and Its Work: Prof. A. H. MacLennan | 31 |
| Greenhouse Vegetable Growing: T. Sanderson | 35 |
| Root Vegetables Act: G. E. McIntosh | 40 |
| Address: A. Goulet | 47 |
| Melon Growing: Harper Secord | 48 |
| The Seed Control Act | 51 |
| Co-operation: Hon. M. W. Doherty | 54 |
| The Improvement of Some of Our Vegetable Crops: T. F. Ritchie | 56 |

# Ontario Vegetable Growers' Association

## OFFICERS, 1923

*President:* W. H. Stewart, Aylmer, Que., R.R. 2.

*First Vice-President:* W. J. Cooke, Cataraqui.

*Second Vice-President:* Chris. Fretz, Vineland Station.

*Secretary-Treasurer:* J. Lockie Wilson, Toronto.

*Auditor:* J. E. Rettie, Toronto.

*Executive:* The Officers and N. Sanderson, London, and A. N. Lambshead, Aldershot.

*Representative to Canadian National Exhibition:* F. F. Reeves, Humber Bay.

*Representative to Central Canada Exhibition:* Wm. Trick, Ottawa.

*Representative to Canadian Horticultural Council:* W. H. Stewart, Aylmer, Que.

*Representative to Royal Agricultural Winter Fair:* W. H. Stewart, J. Lockie Wilson, and A. H. MacLennan, Guelph.

## FINANCIAL STATEMENT

December 1st, 1921, to November 30th, 1922.

### Receipts.

| | |
|---|---|
| Balance on hand from 1921 | $159 23 |
| Grant | 900 00 |
| Members' fees | 314 20 |
| Interest | 15 81 |
| Garden Competition entry fees | 42 00 |
| Field Crop Competition entry fees | 252 00 |
| | $1,683 24 |

### Expenditures.

| | |
|---|---|
| Auditor, 1921 | $5 00 |
| Convention expenses | 43 75 |
| Postage | 5 00 |
| Petty cash | 5 00 |
| Expenses, Directors' and Executive Meetings | 161 25 |
| Stationery | 41 00 |
| Garden Competition Prizes | 216 00 |
| Field Crop Competition Prizes | 540 00 |
| Membership Competition Prizes, 1920 | 23 00 |
| Balance on hand | 643 24 |
| | $1,683 24 |

W. H. Stewart, Aylmer East, President O.V.G.A.

# Ontario Vegetable Growers' Association

## EIGHTEENTH ANNUAL CONVENTION

The Ontario Vegetable Growers' Association held its eighteenth annual convention in the King Edward Hotel, Toronto, on Thursday, February 8th, 1923. There was a splendid attendance of delegates from all the branch associations and it was the largest and most enthusiastic meeting of this Association ever held. Mr. G. H. Poad, President of the Association, occupied the chair.

### PRESIDENT'S ADDRESS

G. H. Poad, London

I welcome you to the eighteenth annual convention of the Ontario Vegetable Growers' Association. At the convention of 1919 the then President, Mr. J. J. Davis, in his address said, "The long nightmare of war with its horrors and privations is over," and I am sure that with him we agree. After four strenuous years of what was perhaps the greatest war the world has ever seen, we hoped to be free to pursue the fruits of our industry again as in the times of peace, but the four years that have passed since that time have been years of unrest. The reconstruction period we had hoped for did not materialize to the extent we had anticipated, for during those years the world has been in a state of unrest.

Since the high tariff wall of the United States has been raised it has practically stopped all exportation of vegetables from Canada to that country. I see by their reports, however, that they have a great shortage in some things and high prices prevail for some products. With their great population this may have a tendency for lowering the duty. It has been reported that certain vegetables brought into this country from the United States have not paid the required duty in full. I think we should keep an outlook on this matter, and where we find a concrete case we should report it to the proper authorities.

Last year I suggested that a committee be appointed to go into the question of growing northern grown potatoes for seed. The committee having met brought in the following report: "The seed potato industry in New Ontario is being conducted and developed by the Provincial Department of Agriculture in our best interests." They also suggested that some start should be made in producing some "early Ohio" for early growers. It is very important that the question of getting certified, guaranteed stock of seed potatoes for the growers be encouraged, as I think they will give us a bigger yield and a better quality. Potato growing has become a great industry and is being developed in larger quantities every year, and we must do everything possible to make it easier for the grower.

To the gardener it must be business as usual, and in the coming year with the Ontario Vegetable Growers a little better than usual. While the crops of the past season were good, prices did not come up to our expectations. Some

varieties of vegetables have been hard to sell in London district; thousands of early cabbage rotted in the field, not being worth carting to the market. Onions have been sold in London by commission men for $1.50 per 100 lb. sack; this would net very little to the grower. Our cry is greater production, and to this end we seem to devote all our energies. The great problem of larger markets for our products will have to be solved sooner or later, and the quicker we turn our attention to this matter the better. Large trucks came to London market from long distances loaded with vegetables last year which sometimes glutted our market. The system of good roads and better means of transportation must mean that we must have a larger demand and a greater consumption for our vegetables. We have been calling for more men for the garden, and we have been complaining because our boys have flocked to the city, but a larger population in cities means a greater demand for our vegetables. I am of the opinion that if some means can be worked out whereby vegetable growers of the Province may become better informed of the acreage and conditions of the crops from time to time it would assist a very great deal.

At a Directors' meeting held on December 21st, Mr. Cooke suggested as one of the topics for to-day to be discussed, "Some System of Advertising our Vegetables as a Wholesome Necessary Article of Diet," which I think, if properly carried out, may be a means by which people may acquire a greater liking for them.

Some years ago a letter was sent out to the secretaries of the different branches asking that a short report of the work done by each branch during the year be sent in to the central office. This I think has been discontinued. I would advise that something along this line be revived as it may be a means of education. Some of our cities, such as Sarnia and London, have to my knowledge in the past few years saved hundreds of dollars in buying seeds, fertilizers, baskets, potatoes, etc., co-operatively. This should be made known to every branch. I would recommend that greater privileges be given the President, whereby he could be free to visit all or any of the branches during the year. I think there is a great future before us. Canada is young, with wonderful possibilities; gardening has made great strides the last few years and with a greater co-operation on the part of vegetable growers, and working together with this end in view to make Canada a great and prosperous nation, we may say:

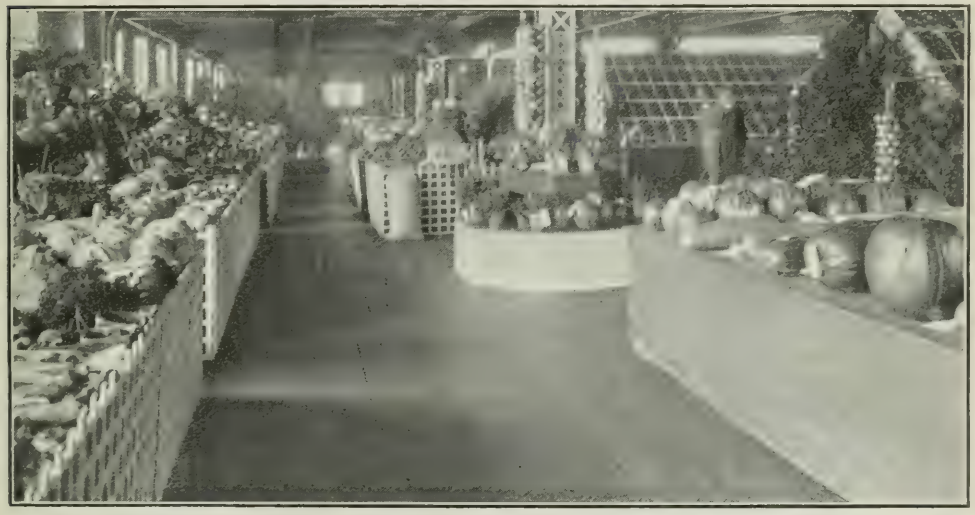
"To count the life of battle good
And dear the land that gave us birth,
But dearer still the brotherhood
That binds the brave of all the earth."

MR. GUTHRIE: The most important thing at the present time is the markets, and if we knew what the different branches are doing, if they are scarce of one product or the other, if we could have some way of keeping one branch in touch with another, we would do a wonderful lot of good and at the same time increase the membership of the Ontario Vegetable Growers' Association.

W. H. STEWART: It is that spirit that has held us together and brought interest into the Association. During the past year we thought market conditions were not just right, so we got busy on them early in the season, and we are developing now what we expect will be a very good retail market. We have gone to the city, the Board of Trade, and have got results. We got those organizations to work, and we hope to have a good market for the spring. What can be done locally may be done on a much larger scale by the Central Association. We have proof of this through the Rotary, the Kiwanis and similar organizations, where some agent is always at work to keep the interest going and it does not flag.

A. N. Lefebvre: I would suggest having reports from all members as to the acreage they put down in the different lines, each secretary getting the reports from his branch and forwarding them to the Central Association. They could publish a little pamphlet or report to be returned about the first of July or of August. Then we would know what we are short of and what we have too much of, and the market would not overlap. Take in the spring of the year when we are getting $1.25 or $1.50 a basket for tomatoes, and some of the western branches bring in 15,000 to 18,000 baskets, and in one day lower the price we receive to 35 cents a basket. That is not quite fair to us.

T. F. Ritchie: In connection with demand and supply, at that season of the year when the tomatoes are coming in, or any other crop, if we had some means by which local markets, or the heads of the different branches in the neighborhood of these local markets could be supplied with the information as to the supply on hand, and where certain quantities of vegetables could be placed at that time, it would be of value to all concerned. In that way I believe



Ontario Vegetable Growers' Exhibit at the Royal Agricultural Winter Fair, Toronto

we would benefit more than ever by having a record of the acreage grown. I believe it would be better if we had some organization whereby at the season when tomatoes are grown or say onions, if there was a chance for marketing heavily, to have brought in from other centres such vegetables as could be marketed there without interfering with your local trade. That would be one solution to the situation.

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## REPORT OF THE SECRETARY-TREASURER

J. Lockie Wilson, Toronto.

The year just closed was a very favourable one for the production of vegetables, but, unfortunately, the prices received for same were much less than in former years. Market gardeners, however, are accustomed to setbacks such as these and never yet have gone on strike. It would seem that something must be done in the near future to obviate the spread in prices between the producer and the consumer. It is all very well for the denizens of our towns and cities

to object to increasing the number of labour men and mechanics, and, at the same time, hold up both hands for those who are willing to purchase land and grow more vegetable products, while, as a matter of fact, within a radius of 50 miles of Toronto thousands of bushels of tomatoes, cucumbers and other vegetable products have been left to rot in the fields for the very good reason that the markets were already glutted and after producing, picking, basketing and paying the carrying companies' charges and the 12½% commission charged, the growers would be worse off than doing as they have done, leave a substantial portion of their crops to rot in the fields. They, at least, would have the satisfaction of having their land in nearly as good condition as it was in before they expended their labour upon it, but it would certainly prove an expensive fertilizer. Vegetable lands within a reasonable radius of Toronto cost from $300 to $1,000 an acre, and in order to produce these crops a costly equipment is required; greenhouses and glass for hotbeds and machinery run into a large amount of money, and repairs for breakages are very expensive. The present cost and scarcity of coal is also a great handicap, as well as the high cost of express rates.

And in the last analysis something must be done, quickly done, to find markets for your products, or the cry "Back to the land" will go up in vain. I think you will agree with me that much credit is due the Hon. Manning Doherty, our energetic Minister of Agriculture, for the splendid fight he is putting up in your interests for better markets, sane distribution and co-operative effort. This can only be brought to a successful termination by growers getting together, watching the markets and preventing the glutting of same at any one point. Would it not be possible to arrange with the Department to have some one specially designated, for a start at least, who will keep in touch with the growers and markets and notify the officers of our different branches as to the best points to ship to, from time to time?

## Field Crop Competitions

The field crop competitions conducted by the Ontario Vegetable Growers' Association in tomatoes, celery, potatoes, onions, melons and cabbage, continue to meet with the approval of the members of our Association and the exhibits at the different fairs in the Province were of the highest possible quality and are improving from year to year. I wish particularly to note the display of your products at the Royal Agricultural Winter Fair which was much admired by those who viewed them. The magnitude of this exhibit was caused by the fact that it was held late in the season when all the crops and fruit were fully harvested. The Canadian National Exhibition, coming as it does the last of August, and the first week of September, is too early for many of your products.

## Exhibitions

I am quite confident that you will agree with me that the compelling of the prize winners to show at Ottawa, Kingston, Toronto and London, is a mistake as the London shipper to Ottawa, and *vice versa*, is liable to have his products thrown on to express trains, bruised and withered, and not in the best possible shape for show purposes. The growers who reside within a reasonable distance from where the fair is held stand in a much better position as they can deliver their vegetables direct to the exhibition without being shipped long distances over railway lines. I would therefore suggest that a certain amount be allowed by the Central Association to assist the branches within a reasonable radius from where these exhibitions are held to make a display not confined alone to the six crops in the competition, but to a general vegetable exhibit, that will

be worthy of our Provincial Association. I am confident that there will be no difficulty in getting the management of these fairs to offer satisfactory prizes for same. This will eliminate the heavy cost of express charges in shipping your products long distances. The Department last year paid the express charges to the Canadian National Exhibition and your Association those to the other three fairs.

The garden competitions held by our Association are doing good work in encouraging vegetable growers to produce better and cleaner crops, and they are particularly valuable in encouraging neatness in the surroundings of those engaged in this important industry. Judges report a much desired improvement since these garden competitions were inaugurated.

I am in receipt of correspondence from the Canadian Council of Horticulture asking for an expression of opinion from our Association as to whether you are in favour of having the duty on fruit and vegetable grading machines removed, as these are not manufactured in Canada, and also that the sales tax on spraying and dusting supplies be taken off.

In view of the fact that the duty has been removed from farm tractors, cream separators and some other farm machinery, it is considered that grading machines should be put in the same class. The removal of the sales tax on spraying and dusting machinery is considered as in the interests of the Dominion on account of the alarming increase of noxious insect pests in recent years.

A new Seed Control Act is to be brought before the Federal Government at Ottawa, at its next session, which will supersede the Seed Control Acts now in force. Sections that will particularly affect the members of our Association are as follows:

Section 4.—No person shall sell, offer, advertise, expose or have in possession for sale for the purpose of seeding in Canada any seeds in containers containing more than one pound of seeds of rape, mangels, beets, turnips, swedes, carrots, parsnips, radish, onions, tomatoes and other kind or kinds of field root or garden vegetable seeds that may be prescribed by regulation, unless they are free from noxious weed seeds and are graded and marked in accordance with section 3 of this Act, or a tag or label, durably attached thereto, is branded or marked on one side in printed characters in such form and manner as may be prescribed by regulation with the following information only, the name and address of the seller; the name of the kind of seed; the percentage of germination; the origin of production.

Section 5.—No person shall sell, offer, advertise, expose or have in possession for sale for the purpose of seeding in Canada, any seeds contained in containers of one pound or less of seeds, unless they are free from noxious weed seeds, and a tag or label, durably attached thereto, is branded or marked on one side in printed characters in such form and manner as may be prescribed by regulation with the following information only,—the name and address of the seller; the name of the kind or kinds of seed; the year in which the container was filled; the percentage of germination when such germination is below the minimum percentage of germination prescribed by regulation for seed of the kind.

Section 8.—No person shall import into Canada for the purpose of selling or offering for sale any seeds that are of a quality inferior to that which is permitted to be sold for the purpose of seeding in the country of origin or the country from which the seed is imported either directly or indirectly, or any seeds that do not conform to the provisions of this Act and regulations made hereunder.

Under the exemptions to the Act is the sale of Elite Stock Seed that may be produced and sold by any plant breeder to a seed grower unless such seed be sold again.

The Seed Department at Ottawa has asked for a representative of our Association who was a large purchaser of seeds and producer of garden truck, to be appointed to meet the Federal Minister of Agriculture, and delegates from the different Provinces, to discuss and make recommendation for or against different sections of the Act that concern our industry. Mr. W. J. Cooke was appointed and Mr. Stewart, our First Vice-President, was asked to accompany him. The report on what was done will be made by our delegates.

Your directors have prepared a programme which will, I am sure, be of interest to your delegates, and we hope that all will take part in the discussions that may arise from time to time. The greatest of harmony has always prevailed during the sixteen years that we have worked together, and I trust that the convention of 1923 will be the best ever held.

With reference to exhibitions, Mr. Wilson informed the meeting of the decision of the Board the previous day, *viz.*, that the compulsory exhibits to Ottawa, London and Kingston be discontinued and that the branches in each district get together and put up an exhibit of the vegetables grown in the district that would be worthy of the Ontario Vegetable Growers' Association, and that the Central Association assist financially the putting up of such exhibit.

Moved by W. H. STEWART, Aylmer E., Que., seconded by T. W. BAMFORD, Belleville: "That we urgently request Hon. Manning Doherty, the Minister of Agriculture, to have the valuable report of the Ontario Vegetable Growers'

Irrigation at Macdonald College

Association printed as soon as possible after the convention and not later than April 1st, as the material it contains is of vital importance to all who are engaged in our industry. We feel confident that the Minister will do his best to get the information into our hands on or before the date mentioned." Carried unanimously.

Moved by W. J. COOKE, Kingston, seconded by C. F. KITNEY, Peterboro: "That we ask the Hon. Manning Doherty, Minister of Agriculture, to consider the question of appointing someone to keep in touch with the markets for our products and advise the secretaries of our branches as to the best points to ship to, from time to time. In the year just closed we were compelled to let many of our products rot in the fields owing to the fact that we had no markets that would allow us to break even, without considering a reasonable profit for our labour. We congratulate the Minister for the good which he is doing to further co-operation, apparently the only method by which our industry can be saved." Carried unanimously.

## EARLY CELERY CULTURE

C. E. Post, Brighton

The first essential in growing early celery is to have a proper strain of seed. We buy a quantity of seed from different seed houses and test it out one year in advance. In testing it we find as many different strains as we have different packages of seed. After testing we pick out the strongest growing, purest and the one with the finest appearance when blanched. We sow in flats in the green house, the first week in March, and as soon as the plants are large enough to handle we transplant them. We try to keep them growing steadily and when they have attained a height of two inches, we move them into cold frames. By the middle of May, we have plants six inches high, which will stand almost any kind of weather. They are then ready for the field.

Q.—At what temperature do you like to plant them when transplanting the first time?

C. E. Post: We don't use the thermometer at all. It requires a good moderate heat. We use a 4-foot furnace. It is too hot there for the seed to germinate.

W. J. Cooke: You did not explain the depth and the methods you take to get the seed to germinate.

C. E. Post: We use the same soil for growing the seed in, but we mix a little manure in with it. That is the same soil as in the field—it is a muck—and right north of me are sand hills and the force of time has carried the sand down, and it is all mixed with the muck. We use a trowel and go over the top of the boxes and pack it all down firm. Then we take a stick that will go into a box 15″x16″, and we must merely make a mark there across the box. We put eleven of those into a 16″ box, then we sow the seed along, not very thick. Then we have our soil all prepared. We take a very fine sieve and sift soil for covering this seed on top. We just merely cover it. After we get the seed all sowed we cover it with burlap and keep it covered. That retains the moisture on top of the box where you want it.

W. J. Cooke: You don't pack that soil after sowing the seed?

C. E. Post: No, we just firm it.

Q.—Do you put any more sand in the soil with which you cover your seed than you do in the box with which the seed is sown?

C. E. Post: No, you must be very careful in watering the young celery sprout, because if you get them too soggy they will damp off in spite of you.

Q.—What is your system of watering?

C. E. Post: On the sprout, we use a watering can.

Q.—Do you not set them in a bath?

C. E. Post: No.

W. J. Cooke: You mean the sprouting seed before the plant has come on the ground?

C. E. Post: No; I mean after they come up. If you keep pouring water on, the first thing you know you will find a long brown streak on them.

Q.—What advantage do you find in sowing it in a row in the boxes?

C. E. Post: If you have quite a lot of transplanting, if you take your stick and dig up a piece in a row, you can take them up and sort them. If you are not very careful, if you have them broadcast, in digging them up you will tear half of them up.

Q.—In watering those boxes, do you lift the burlap up?

C. E. Post: No, leave it on. If you take the burlap off, you wash the seed out.

Q.—How far apart do you transplant?

C. E. Post: We have them in boxes 6″ one way, and we put from 11 to 12 rows in one box.

Q.—When you transplant them, how many in a box?

C. E. Post: We sometimes put 50 and sometimes 100.

Q.—Do you believe in putting them 1 inch apart?

C. E. Post: It gives about 2 inches of space.

Q.—Regarding the planting—I have seen some market gardeners use paper in order to keep the boxes tight; others would use open boxes—which would you advocate?

C. E. Post: My experience is if you use a box that there should be a hole in the bottom, then there would be no danger of any of your plants getting soggy, but I don't use water that way.

Q.—Do you ever soak the seed before planting?

C. E. Post: Yes; it will make about 24 hours difference in coming out. Soak them in warm water overnight.

Q.—Do you do any spraying of the celery in the field?

C. E. Post: Yes, the seed sprouts should be sprayed in the flats thoroughly every week. Bordeaux mixture, I think, is the best on the market. I pin my faith in Bordeaux with every fungus we have. We use a 4.4.40, sometimes stronger.

Q.—Did you ever try dusting with Bordeaux dust?

C. E. Post: I have no use for dust.

Q.—Do you mix your own spray, or do you buy it?

C. E. Post: We mix it ourselves. We have got down now to moving the plants out in the cold frames ready to transplant in the field.

Now, the next is the soil. The soil for growing early celery especially must be well drained, preferably under-drained, because you know who grow celery, if it gets stuck in the field and stays there for a week or ten days, when it starts away again, ninety times out of a hundred it starts to seed. One year I lost a whole acre before I had underdrained. It must be well drained.

When you put out the early celery about the middle of May, the soil is very cold, and it is in a state then where it will not give up fertilizer to enrich the young plants; therefore you must use a quick acting fertilizer. We use about a 4.8.4. We do our own mixing, because we know exactly what we are planting on the ground. If you buy mixed fertilizer the analysis may be 4.8.4, or 4.8.10, but you don't know anything about it. If you use nitrate of soda, acid phosphate and potash, you know exactly what you are getting, and the soil being cold at this time, this nitrate of soda the minute it gets in contact with moisture dissolves, and it is ready for the plant to take up.

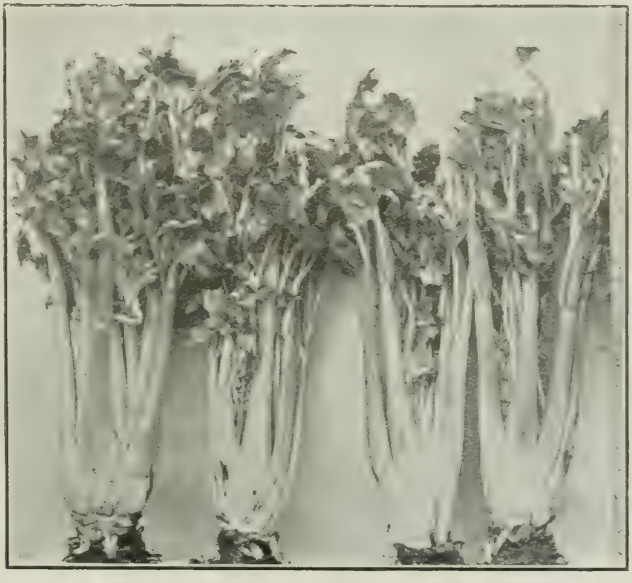
I told you about mixing the fertilizer. We have got the plants ready, we have got the ground well cultivated, and we have got the fertilizer well mixed. We now want to get the field ready to sow fertilizer. First we get 420 ft. of cotton twine, we put a peg on each end. We start 3 ft. from this edge of the field, we put the peg down, and go clear to the other end of the field and put the line down there. We space that off in four equal spaces, and put a peg on each end of the mark. When we start to sow fertilizer we use a dairy pail that holds from 25 to 30 lbs. of it. We sow a pailful every time between these stakes. That is so that every foot will get its own amount of fertilizer. We sow the fertilizer in a strip about 8 inches wide. If the wind is blowing from the west we sow it a little more on the west side, so that the biggest part of the fertilizer will be right where that line is. Then we move the line 3 feet over and we sow

there. Then we get a one-horse cultivator or scuffler and we go over where that line is. We take it about 4 inches deep. If it is very dry we only do one or two rows at a time, because that loose muck soil dries out very fast. So that we just cultivate two rows more, then we take a garden rake and level it all down.

When you come to planting, we stretch the line back on those stakes that we put there when we sowed the fertilizer, and we know that that fertilizer is exactly under where we plant the row.

Spraying has already been discussed.

When we get ready to plant, we have already got the plants sprayed in the cold frames. We have a big tub we manufactured, holding fourteen boxes. We take fourteen of those boxes, set them in that tub and turn the hose on. We soak those plants with all the water they can take up. Then we load them on the wagon, draw them into the field, and lay them down where you want to plant them. Take a plant that has been in dry soil and put it into the field,



Two Strains of Late Celery, Medium Green

and it gets too dry. When we go to plant them, we just take the plant out of the box, and the man drops them every 6 inches along the line.

After they are planted we cultivate just as often as we have time—once a week anyway. Then we start spraying in the field, using a spray motor machine. We commence spraying about the first week we put them out in the field, or as soon as they need it. In about ten days we start spraying again, and we spray every week or ten days until the celery is ready to board up. After it is boarded we never spray it again.

After the first two weeks we begin to irrigate.

Q.—Is it the Skinner system?

C. E. Post: No; I would not take it as a gift for celery. Celery blight is one of the worst enemies we can get, and with the Skinner system you have to keep it going all the time, and the celery gets too wet. With the gravitation system, however, it runs along the row all the time, and it never wets the plants.

I don't remember in quite a long time getting enough rain at any one shower for what celery needs. You think you have had a very nice shower, and find the celery has taken it all up in one night.

In about six weeks after you plant it in the field your celery is ready to board up. We use 6-inch lumber, spread ½ x 12 inches. We use that for blanching. It uses 12,000 feet to the acre. It should not be boarded up more than two weeks before it is put on the market. If you leave it too long, especially in hot weather, the outside stalks become soft. Paris Golden loses the beautiful golden colour and gets too pale a colour if you leave it too long.

W. J. Cooke: You did not tell us how you make the depression in the row where you plant your celery.

C. E. Post: We don't make a depression. It is perfectly level when we start planting.

W. J. Cooke: Where does your water supply come from?

C. E. Post: From a spring creek. I have five acres I can take water from just as if it were running along the floor.

W. J. Cooke: What form of potash do you use?

C. E. Post: Muriate of potash.

W. J. Cooke: Do you plant single or double rows?

C. E. Post: Single rows entirely. We are troubled a good deal with chick weed and we find it costs too much in double rows. Also we find we have less small heads in single rows.

Q.—At the time of transplanting, before you set out your plants, do you reduce the foliage at all?

C. E. Post: We plant them just as they are in the flats.

Q.—Don't you think in a dry spell, it would be an advantage?

C. E. Post: We don't have any dry spells in our place.

Q.—Do you put any sand between the boards?

C. E. Post: No; just lay the board down flat. With one man at this end and another at the other, put the board up against the plant and peg it down.

J. Lockie Wilson: Do you tile drain?

C. E. Post: Yes, every 30 feet.

Q.—Where do you get your seed?

C. E. Post: I buy from various seed houses, some from the United States and some from Canada, and I am buying in Denmark now.

Q.—Have you had any experience with the Denmark seed yet?

C. E. Post: Mr. MacLennan sent me two packages of seed from C. P. Strandholm, Copenhagen, and one was Paris Golden Yellow. I only had enough for three rows across the field. We planted alongside of that Paris Golden self-blanching trench-grown seed. What I got from Denmark stood one foot higher than the other. It was a beautiful long shank from the root to the first limb, round compact stock. I sent last week for a quantity of it to try it out again this year. The only way that you can make a success in growing celery is to get reliable seed.

Q.—Some people spread manure between every other row of celery. Would you advise doing that?

C. E. Post: I never tried it.

Q.—Did you ever try spreading the manure in the field?

C. E. Post: Yes, years ago, when I had time to bother with it and did not have to grow so much. You can grow good celery that way. But if I was going to choose between manure and commercial fertilizer, I would always choose commercial fertilizer, because, in the first place, the manure is slow, and

as I told you in the beginning, in the spring time when you plant your celery the soil is cold and the plants can't get the nourishment until the warmer weather comes. If you have a quick acting fertilizer, on the other hand, your plants get an early start.

Q.—You referred to selecting from the seed plant. How can you tell the difference between Green and White Plume?

C. E. Post: We sow a flat of Maul's seed, we sow a flat of Steele-Briggs' seed, another of Burpee's—after they come up we transplant one flat from each of these boxes and mark that. We take that hundred plants just as they come; we don't sort them, and we plant them in a row and mark it, mark the kind it is and where we got it from, and when those four or five strips of plants come to maturity we pick out those strips that we want our seed from. We take the best strain that is there.

Q.—How does that figure out in fertilizer per ton, per acre?

C. E. Post: A little over 3,500 pounds.

Q.—Do you advise the same cultivation for late celery?

C. E. Post: Just the same.

Q.—About what time do you sow for your later celery?

C. E. Post: About the 10th of April.

Q.—What precaution do you take not to damage celery roots.

C. E. Post: We narrow the cultivator and reduce the depth of the cultivation so as to protect them.

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## ARTIFICIAL HEATING OF HOTBEDS WITHOUT MANURE

Prof. A. H. MacLennan, Guelph

I can tell you, with regard to the subject on which I am to speak, what I have seen in the past year in regard to heating for hotbeds. If I were a grower and up against the problem of no manure I would change my mind and get into the greenhouse business, because in the end it will more than pay for all the trouble you go to, and you will have the greenhouse.

That seems rather a wide statement to make, but it is one from personal experience and from the experience of others. I cannot see any other solution to the problem.

J. Lockie Wilson: What is the cheapest type of greenhouse?

Prof. MacLennan: One that you can build yourself, by buying a few parts from greenhouse firms, the pipe frame. You can go to the Jews and buy up second-hand split pipe, just as I have done at Guelph, and bought the angles and the tees from the greenhouse company; you can buy them and put them up yourselves. We put arching in the house right through. Now if you are not mechanical, and want to get definite figures on it, Mr. Sanderson of London had three new houses built this year. My knowledge of construction leads me to the same opinion that they have, that that pipe type of house is the cheapest. Then lap the glass but don't lap it too far. 3/16 of an inch is the outside limit that you can go. That does not give you much to spare, but it gives you the best type of house, and one that will cut down your coal bill just one-quarter.

Another thing that we are looking into at the present time at Guelph, and we are hoping we will be able to get it, is to put in an oil burner. There is plenty of fuel oil in Ontario, and we are hoping to get in one of the boilers. There is one in the new public school at Stratford, that they can keep a steady

temperature in the rooms of 65° at a cost compared with coal of $10 a ton, and your pressure can be varied sufficiently so that you do not have to force it at any time. You can lower your pressure on the oil.

Q.—What does an oil furnace cost?

PROF. MACLENNAN: There is the big problem at the present time. You must have your boiler just as you had before. The piping cost them, I think, about $400 to put in. The trouble at the present time is to get coal, even if it is half soft or half slack.

The best answer to the problem, that I know of, is to build a greenhouse It will pay the man who gets started in this to build a house 30 feet wide, rather than 20, and 100 ft. long, rather than 50 or 60, because outside of the extra cost of construction you can heat that house just as easily, and it will run at a more even temperature than will a smaller one. The larger a volume of air space you have in the house the easier it is to keep that air at a steady temperature. At Guelph we have houses 20 feet wide and 25 ft. and 30 ft. wide, all of them 60

Gardener's Exhibit at Peterborough Fair

ft. long. The largest is the easiest one to heat. It takes more coal to keep up heat in the smaller house.

Another thing: last fall we grew the chrysanthemums in the larger house without turning the heat on. The roof of course is lapped glass, and it makes a good deal of difference. I know it did on the coal bill there last fall. If you have a lot of sash on hand, you can, if you want to, make a make-shift type of house out of those sash. There are two types—one that just takes two sash; there is a wall built 2 ft. high of cement or wood, the house at the bottom is about 10 ft. wide, and that will set up this way Λ. They are placed so they can be either hinged at the top or at the bottom. This means you would not have room sufficient to get along, and the way that is overcome is by digging a trench in the centre and lowering the path so that you can work along it.

Another house I saw built of sash in Boston was made of two rows of sash on each side. That gave you a house 20 ft. wide. On the side walls, the sash were turned on their side so that you had 3 ft. and they put about 2 ft.

underneath, giving 5 ft. to the eave. The framework on which those sash are laid is made of wood.

At the Landreth Seed Farm in Bristol, Pa., they have a series of beds 100 ft. long, and these beds are heated from the boiler room in the main plant. They run 1½-inch pipe along the higher side of the frame, and back down the lower side of the frame; in that way getting a drop, because they use hot water.

At the H. J. Heinz Company's property at Bowling Green, Ohio, they had a series of hotbeds which were heated by steam, but the biggest difficulty was to keep the temperature at an even degree of heat without cooking or drying out the plants too much. There was another series of beds that I saw there where the pipes were laid underneath the ground. Where you put pipes underneath your soil, it is necessary to cover them in some way, so that you will spread the heat in the pipe along all over the under surface of the soil. There are two ways to accomplish that. One that is common is putting a 1/2 tile over the tops of the pipes, and in that way keeping it down below. But the best way I have seen is putting the pipes in, then covering them with coarse cinders or rock and gradually bringing it up finer and finer, until you have almost a fine sand. Now of course you see having that coarse gravel underneath gives the heat a chance to spread underneath the bed. But it all comes back to the same thing—of the cost in the end. You are getting something that is only of use to you a small part of the year, and if you are going into the work very largely it will bring you back to the point of getting into glass houses finally.

In 1916, after two years' fooling with the steam and steam hotbeds at the Heinz Farm at Bowling Green, I recommended to them that they buy a set of greenhouses which were on the market. They did so that fall before I left, and you could not get them to do without these today, and they grow from five to six million tomato plants a year. You could not persuade that firm to go back to the old type of bed.

Q.—What is the best width of glass in a greenhouse?

PROF. MACLENNAN: 16x16 inches. That is the practical commercial size. We have found that when we break a glass 20x24 we are out of pocket. When you take a 16x16 and break it, it does not cost nearly as much. And when you have a roof that slants right down on top of the glass, as at Guelph, we have the trouble, if the snow is not removed, the heat of the building melts the snow and forms icicles, and the icicle breaks off and comes through the glass.

Q.—What kind of glass?

PROF. MACLENNAN: Double diamond. Be careful to get a glass that has no waves in it. A poorly blown glass draws the sun's rays to a point, and the plant below it will be burnt.

Q.—Would common glass do for the sides?

PROF. MACLENNAN: Yes, it would do all right for the sides.

W. J. COOKE: Could you give us a rough estimate of the cost of a 30x100 ft. greenhouse?

PROF. MACLENNAN: I have been trying to get, at Guelph, a new set of houses so that we can do better work. In figuring up the cost, taking Mr. Sanderson's figures, six houses 32 ft. wide and 200 ft. long would cost about $25,000, or about $4,000 for one.

C. FRETZ: I am building a house for which Lord & Burnham have the contract. The house is 41.3x120 ft., 16x24 glass, with the high sides. They furnish everything complete for $5,000, except the boiler, and you have your cement to add to that.

T. Sanderson: We have built this summer three houses 32x200 ft. King pipe frame construction. We do our own cement work and our own heating and irrigating. The King Construction people supplied the material and did all the erecting, including the glazing, 3 coats of paint, and the putty. We supplied the glass, and the contract for those three houses was approximately $8,500. We bought our glass a little cheaper than their quotation.

W. J. Cooke: Would $1,000 per house cover your heating and glazing and erection?

T. Sanderson: Including boiler and everything complete, it would run nearly $2,000.

W. J. Cooke: That would run about $5,000 per house 32x200 ft?

C. Fretz: My figures include side ventilation, and everything geared in the top ventilation.

Prof. MacLennan: Top ventilation is desirable, but I would not have side ventilation. We have one now and are taking it out.

C. Fretz: Do you grow a fall crop of tomatoes?

Prof. MacLennan: We did for a good many years; they don't pay us. We grow flowers now and make more money out of them.

C. Fretz: You can't cut on the price of glass or on the price of your frames, or on the price of your cement work.

Mr. Fretz here also drew attention to the fact that the Lord & Burnham type of house had a flat iron rafter, the other was a pipe frame, and comparing the two was not fair because of the extra length of life and the greater durability of the flat iron rafter as against the pipe.

Prof. MacLennan: A pipe frame house can be built cheaper than an iron rafter house.

E. J. Atkins: Last fall we decided to put up a 32 x 100 ft. house for which we had available second hand pipe. We found we could buy a Steel No. 2 Construction from Lord & Burnham, and it would cost us only $200 more, and the house they supplied would be a 39 ft. house. You can buy, practically, a steel frame construction at the same price as it will cost you to build a pipe frame.

Another Member: We put up two houses last year 32x200 ft., and the contract to do the erecting was $5,000. All the material was dipped, but we did the painting. Our piping cost us $629 for the two houses.

W. J. Cooke: Can you give me a rough estimate on the cost of a 39x100 ft. house?

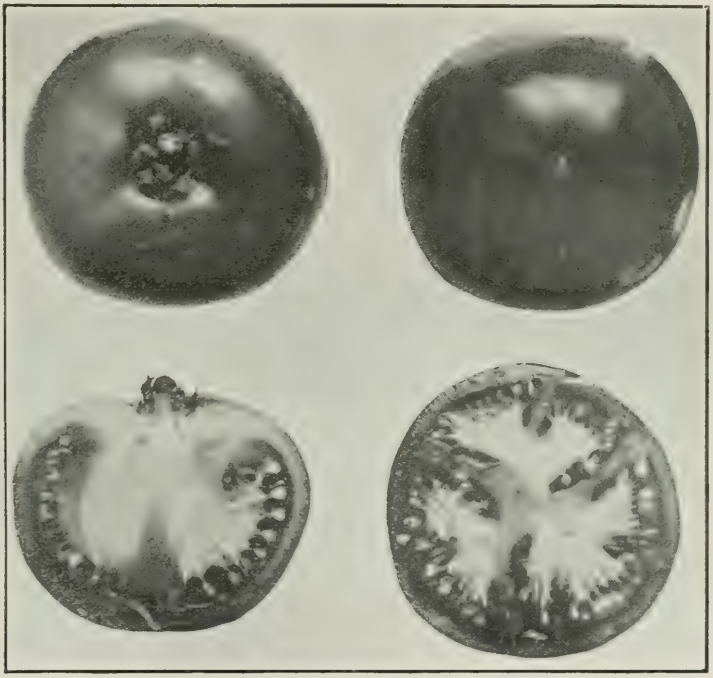
A Member: I found I could buy glass cheaper than the Lord & Burnham people could. This contract price of a 39 x 100 ft., No. 1 Steel Construction, paint sufficient to give it three coats, was $2,100. We supplied the glass and the cement. You can erect those steel frame houses for 20 or 25% less money than you can put up a pipe frame.

A Member: Has any gardener tried out the oil burner. One at Ottawa did and one night both burners burnt out. Those present should study it out thoroughly before they invested much money in it, and get a burner that they can rely on. This one was on the gravity system. The gardener has gone back to coal again.

J. Lockie Wilson: It is a good plan to investigate the oil burning system very thoroughly before any of our growers go into it. If a number of our growers got into the oil burning business, the price of the oil would go up to suit the purposes of the oil producers.

PROF. MACLENNAN: I did not recommend oil burners. I am trying to get into the College a burner for one of our three boilers, and have it work alongside of two coal burners. In regard to their burning out, there is one at the late Sir John Eaton's greenhouse that they have been using off and on, and H. J. Moore of Arlington, Mass., one of the largest greenhouse men in the vegetable business in the United States, has three tiers of oil burners. If we test it at the College, it is going to save you experimenting, and if we find it satisfactory we have oil on this side of the line and do not need to spend Canadian dollars on the other side.

C. FRETZ: With regard to the oil: I have watched this pretty closely, because I am certainly interested in it, as I have to purchase six or seven cars of coal each winter. I took this up with Lord & Burnham, and I think Mr.



Good Type of Red Tomato

MacLennan is perfectly right when he says we should wait. Lord & Burnham said "we are looking after our customers," and they say: "Don't undertake anything until we investigate, or the Government investigates." One in St. Catherines heated a block all through last winter and this winter, and I asked the man the other day if it was cheaper than coal. He did not say whether it was or not. If it was much cheaper he would have said so. In any event, we have to put in the same kind of furnace, and it is only a matter of changing over afterwards. Let the Government investigate first.

Moved by C. F. KITNEY, seconded by Mr. LEFEBVRE: "That our convention is interested in the experiment above to be tried of installing oil burners in the greenhouse at the O.A.C. The experiment will be of value to our greenhouse men, who find that the scarcity and high price of coal is about prohibitive." Carried unanimously.

## THE POSSIBILITIES OF COLD STORAGE FOR OUR VEGETABLE PRODUCTS

ANDREW FULTON, BRIGHTON

Before proceeding with the cold storage of vegetables, allow me to give a brief description of the cold storage plant, Brighton, where the work has been done.

### DESCRIPTION OF COLD STORAGE PLANT

(*a*) Put into operation the summer 1921 by the Department of Agriculture.

(*b*) The plant contains 5 large rooms which are well insulated for the temperatures held.

(*c*) We have a storing capacity of 100,000 cubic ft.

(*d*) The refrigeration is operated by a York 20-ton Direct Expansion Ammonia System, with expansion coils overhead in the rooms. This gives a direct cycle around the produce stored.

*Th object of the Cold Storage:*

(*a*) To demonstrate—

The keeping quality of good fruit.
Extended period.
To avoid "glutted" markets.
Stabilize returns.
Better profits for the producer.

### THE VEGETABLE WORK

Although the cold storage plant is not situated in what is termed a vegetable district, we have not overlooked the vegetable interests, as we have 10,000 cubic ft. space devoted to this work, or three car lots of celery.

As we have only been operating two seasons, I can only state conditions as they have existed.

*The vegetables that have been handled to date:*

Celery.
Peppers.
Tomatoes.
Melons—musk, water.

Celery, which is our largest crop at Brighton, has commanded most of our attention. Also celery is one of the most perishable crops we have to contend with among our vegetables, and we consider if we can overcome the obstacles in the cold storaging of this product, we can handle practically any crop that might follow.

Further, our cold storage warehousemen are refusing to handle Ontario celery owing to its condition on arriving at the storage, and its extreme perishable nature.

Then again, the pit and cellar systems of storing celery are not all smooth running, although a number of growers have had comparative success, as it is very difficult to control the temperatures and moistures during the winter months.

## Cold Storage Experience

During the season of 1921-22, we experienced great difficulty in controlling the accumulation of moisture in the centre of the crates, with the result that we managed to hold the celery in storage for only two months, and then with considerable work in overhauling the crates.

Contrast the past season 1922-23 with the year previous, after correcting the mistakes observed. Out of 500 crates only 10 crates showed signs of moisture, and one crate of celery actually rotted. We consider this a splendid result, especially as none of the crates had to be overhauled before shipment.

*This is how we handled the celery:*

First, cold storage has taught us that:

(*a*) Celery must be well grown. Tall, thick, firm stems of well-compacted heads are desired. Spindly, poorly grown celery is no good for cold storage.

(*b*) It must be well sprayed for blight and tarnished plant bug. The former will not hold in storage but will cause endless trouble, while the work of the bug shows up more pronounced after very short holding. Soft rot follows blight.

(*c*) Pre-cool the same day of pulling or cutting in the garden.

In other words, successful cold storage and marketing of any garden product commences in the garden and not at the storage. It is well to remember that a cold storage plant is not a magician's box where you can place in poor quality stuff and turn out a first quality product. Our experience has been that quality must be there to commence with, as very few of our products improve in flavour and quality after holding in storage.

*Long keeping celery.*

Should not be "blanched."

This saves half the expense of growing celery.

*For short holding.*

Just start the celery with boards a few days.

*Harvest the crop with part roots on.*

This is important so far as our experience has been. The first season our trimmed celery only held a few weeks, and would not bleach as good.

The past season the greenest celery out of the garden is just bleaching nicely now, after four months in storage.

Pack loosely in crates and rush to the cold room the same day.

*Size of Crate is an important matter.*

Our crates should be standardized. I favour the 10-inch Florida crate, as the celery holds well in them and commands a good price.

*Crates used at the storage.*

12 inch, tops off.

16 " " "

24 " " " and partitioned. This allows a free circulation of air through the crates.

The cold storage has the easiest end of the game provided the grower does his bit. We have been very fortunate in having Mr. C. E. Post to work with, as he has shown such keen interest and a willingness to co-operate in everything we ask him. He is willing to do anything once, and the second time if he thinks it is worth while.

Cold storage management responsible for the temperatures, 31-32° Fahr., humidity, 85 per cent. Method of stacking in storage—Tiers, four high, separated with 2x2 inches, spaced about 4 inches between tiers.

It is quite evident that a cold storage or pre-cooling plant at the point of production is necessary for long holding. With the celery land that we have in Ontario there is no reason why we should not keep our own market supplied with first class celery from July to March with careful handling, and give our competitors from the south a run.

### Other Crops Handled in Storage

*Peppers:* We held the Ruby King and Chinese Giant three months. Avoid peppers affected with anthracnose. Store sound specimens.

*Tomatoes:* The varieties of tomatoes handled were: Carter's Sunrise, Ideal, Bonny Best, Seedling.

Irish Cobblers, grown by J. A. Williams, Peterborough

Smooth, clean fruit necessary. Avoid cracks. Watch the degree of ripeness on storing. Well flavoured, firm, ¾ coloured do best. Store in boxes in two rows in paper. Held two months.

*Melons:* Osage, Rocky Ford.

Held at different degree of ripeness. Well matured and flavoured held best, seven weeks in good shape.

In conclusion, there is a great future for the cold storage of some of our vegetables in Ontario. Especially, as every year we see a greater influx of foreign vegetables, which means that our growers must specialize more in districts and co-operate to meet competition.

W. J. Cooke: You spoke of taking the tops off. Was it the tops of the crates or the tops of the celery?

Andrew Fulton: Leave the tops of the crates off, and leave half of the roots on for storage, do not trim them all off. That is an important point.

We also found this year that the celery we were receiving in the cold storage was so well grown, some of it was 30 inches high, that we had to trim the tops off in order to effect an air passage between the celery. But I would like to overcome that if possible in order to compete with our California friends, who do not trim the tops off. I would like to get a deeper green, a grade of 24 inches depth. The trimmed celery wilted very quickly too.

W. J. Cooke: Under ordinary conditions you do not get celery that you have to trim the tops off?

Andrew Fulton: That is quite correct. We have been fortunate in having good celery to handle. Next year I am going to get a carload of celery in from Thedford which is shorter and thicker.

In answer to a question, Mr. Fulton said that the ordinary cold storage houses did not want to handle celery. Our rates for storage are 15 cents a month, or 30 cents for the season, per crate. Commercial cold storage houses charge 25 cents a month straight.

A Member: Do you leave any soil on the roots of the celery?

Andrew Fulton: Just what would cling to the roots when you take it out of the ground.

Q.—Did you try celery from any other district than Brighton?

Andrew Fulton: No, Brighton is an average for Ontario, as it produces a moist, succulent celery.

Q.—What variety?

Andrew Fulton: Paris Golden, Self Blanching.

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## A NEW STRAWBERRY

Mr. Keeler, Brockville: I am the President of the Fruit and Vegetable Growers' Association of Grenville, and reside in Brockville; am a fruit grower. I have been working on strawberries for eight or nine years, propagating, and have got something that is of value. I have these in large quantities, and in order to introduce them to you, I would be pleased to offer to each individual of this Association at this meeting a free gift of 12 plants of this variety for next spring delivery. For references, I would be very glad to have you write to Prof. Macoun, Ottawa, Prof. Neilson of Guelph, or Prof. MacLennan of Guelph. It is a self-fertilizing perfect blossom, and a fairly good yielder.

This berry is a wonderful canner, and especially adapted for fresh fruits. My trade in particular runs to fresh fruit. During the season of 1918 I had a yield of 8,000 baskets per acre. This variety was specially favoured that year by the rains and weather conditions. I have picked specimens from my patch measuring 9½ inches in circumference. If you will let me have your name and address some time during the afternoon, I will send you plants which I guarantee will bear fruit measuring 7½ inches, in circumference in the first year. We generally pick off the blossoms and favour the plant the first year.

The berry has been named the "Keeler." It was a strain of the William Belt. By careful plant selection I have got a picking now of three weeks' duration. It is not a hollow berry. It has no green tip. It is perfectly red.

## SELECTION AND SAVING OF SEED

E. J. Atkin, Leamington

Perhaps the greatest problem confronting the farmer or market gardener is the one of procuring seed that can be absolutely relied upon. The seed problem always has been and probably always will be more or less of a gamble. It is my hope in this brief address to give a few hints that will perhaps help, first, in buying seeds from seedsmen, and, secondly, where selecting and saving is done by the gardener.

In selecting and ordering seeds from a seed catalogue, there are several points which should be carefully observed.

First: Order only from old established firms that have a reputation to maintain.

Second: Note carefully exactly what is said, if the terms as to the excellence of the variety are only general, the seedsmen are not saying much about the particular seed; it may be excellent or it may not. If, however, the seedsman makes any definite statements such as the following, the probability is that the seed can be relied upon:

(*a*) That it is grown under his control from stock which he has himself produced.

(*b*) That he secured it from a producer who uses high grade breeding methods.

(*c*) That he has carefully grown and bred the seed himself.

The seed which the seedsmen buy on the open market is not likely to call forth any such definite statements as the foregoing. The seedsmen do not generally purposely misrepresent their seeds.

Third: If the catalogue is not very clear as to kind of breeding that seed has undergone, write direct and find their strain, purity and parentage.

Fourth: A seedsman who does business principally with market gardeners will be more particular with his seeds.

Fifth: Inquire of your fellow growers what strain of seed they use. Each seedsman generally specializes on a certain line, and is apt to give better quality in this particular seed than others who generalize.

Sixth: Price should always be a secondary consideration. Quality should be the only thought when ordering. Sometimes high priced seeds, however, are poor in quality.

The safest method to follow when all the seeds are purchased, is to buy all seed one year ahead. A small amount is planted the first year, and, if satisfactory, you are assured of your seeds for the coming year at least. If the seeds are properly cared for they will lose very little of their vitality. Some seeds, such as melons and cucumbers, are better the second year than the first. Vermin proof boxes should be used for storing, as mice and rats are very fond of seeds. They should be stored in a dry, airy place, where the temperature will not reach freezing.

When the gardener saves his own seed there are several great advantages, if proper precautions are taken. True, it will not generally pay to save all the different kinds of seed used. The majority of the annuals are easily saved, however, and unless the grower has some reliable source from which to procure the seed, it will pay large dividends to select one's own seed. There are several factors which must be closely observed, however.

First: A definite ideal as to type must be in the mind of the grower, and selection made from plants coming closest to this ideal, providing they are hardy, comparatively free from disease, prolific if large crops are wanted, or early, if earliness is wanted.

Second: The plant should be the unit of selection, seed selection should be made in the field from growing plants if at all possible. Never select fruits in packing sheds for seed, unless the plant is known from which the fruit is taken. Often a fine specimen of fruit will come from a diseased vine or one which has a very poor crop.

On our own farm we save all our own seed of tomatoes, melons, cucumbers, peppers and pears.

The variety of tomatoes is Earliana, and selection is made for earliness and smoothness. After six years of careful selection, a smooth well-coloured early strain has been secured. The plants are watched in the field, and the ones

Marketable Asparagus

showing greatest vigour and earliness are staked. Mosaic used to be very bad in our crop, but we have secured a strain which now shows very little disease. No fruits are picked for sale from staked plants, but once a week after ripening they are gone over and all fruits coming up to standard are picked. These are taken to the sheds and cut open. If the inside is well meated, and the core is not too prominent, the seed and pulp is squeezed into gallon crocks. This is kept in a place where the temperature is about seventy degrees (70°) and stirred frequently. In from twenty four to forty eight hours fermentation will be far enough along so that the seeds will separate from the pulp. Water is then added, the seeds will settle to the bottom and the pulp and other foreign material is poured off. They receive several such washings until they are perfectly clean. They are then spread out on cotton frames and left in the sun to dry, stirring frequently during this process, and care being taken to break up the masses which usually form while drying.

Cucumber and melon seed is saved in much the same manner as tomato seed. The fruits are left on the vine till they become a lemon yellow. They are then picked and laid in a warm place for several weeks or until they become soft. They are then split lengthwise and the seeds are easily removed. They are placed in a crock and allowed to ferment, the same as tomato seed. Pepper seed is handled very easily also. The plants that are most typical and have the best fruits are staked and no fruits picked from them. In the fall, just before frost, the plants are pulled and hung up in a dry place until the vine and fruits are thoroughly dried. The fruits are then picked off and broken open and the seed is easily removed.

Beans that are meant for seed should be carefully watched throughout the growing season. The rows that are left for seed should have no beans picked off for market. They should be rogued several times and any beans not true to name or showing disease should be pulled up.

Never go through the vines while moist, as this will be very apt to cause a bad outbreak of anthracnose, the disease that gives so much trouble to the bean crop. Close watch should be kept on the vines for this disease, and if it occurs, pull up the vines. It is easily recognized by the spotting of the leaves, stem and fruit. The spots are usually more or less dry. This disease carries over in the seed and hence no seed from spotted pods should be saved.

After the beans are ripe they should be pulled and piled in the sun for a few days until the vines are dry. They can then be taken to the sheds and stored in a dry place until threshed out. They are easily threshed if left until frosty weather, and then placed in a tight box or on a floor and flailed out. The seed is then run through a fanning mill and afterwards hand picked and all inferior beans, such as split or spotted ones, removed.

The question arises: "Does it pay to save your own seed?" My experience is that most emphatically it does. Besides, there is a great deal of pleasure and satisfaction in knowing that you have a reliable supply of seed to plant for the coming year.

Beyond doubt better seed can be thus produced than it is possible to buy on the open market, where thousands of varieties are raised for the wholesale trade. It is a great wonder that the seeds we buy from our seed houses are as good as and true to name as they are. They pass through dozens of different hands and to err is human, so no wonder mistakes and disappointments occur.

The probable solution to the seed question is elimination of hundreds of our poorer varieties, and standardization on a few of our best varieties, of each fruit, vegetable and flower. This would give seedsmen an opportunity to improve those varieties and give cheaper and better seeds to the trade.

C. E. Post: What is the best variety of your peppers?

E. J. Atkin: We grow almost altogether Sweet Peppers and Ruby King. Ruby King is the hardiest and most prolific, and it also is in bigger demand on the market. If you will get Ruby King and make a few selections from your patch, you will soon have a superior strain.

C. E. Post: What do you grow for your hot pepper?

E. J. Atkin: I cannot give you the name of it. I came across it at Windsor about ten years ago. I have been saving my own seed ever since. It is about 6 inches long and it seems to be what our market demands.

Lawrence Baldwin: I have been saving my own onion seed. This year I want to save from a second variety. How far should I keep those onions apart to prevent cross fertilization?

PROF. MACLENNAN: We cover practically all of ours with a thin muslin sack. In that way there is no danger of crossing until the air can get through.

LAWRENCE BALDWIN: How about peas?

PROF. MACLENNAN: There is very little danger from cross fertilization of peas or tomatoes.

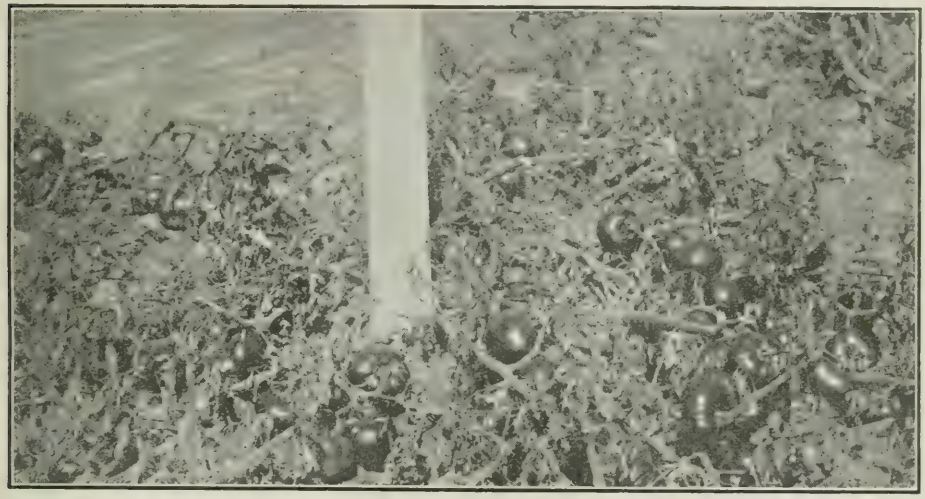
Q.—You say you apparently got rid of mosaic in tomatoes?

E. J. ATKIN: With bad weather conditions, it may break out in our fields, but we have apparently almost a disease-resisting strain.

Q.—You stake your plants in the field, and select the plant that follows the characteristics that you want for your strain?

E. J. ATKIN: Yes, I am trying to get away from the rather rough characteristic of the Earliana. That is its big fault. That crookedness seems to be synonymous with earliness, and it is pretty hard to get rid of that crookedness and still retain the earliness.

Q.—Afterwards when you select your plant, you go through your field to pick your fruit for your seed. What do you do then?



Alacrity Tomato

E. J. ATKIN: I save the seed from the plant where the fruit from the whole plant has the characteristics of the strain that I am after. It does not make any difference whether you save the crown or the lateral plant, you have to take the characteristic of the whole plant.

J. LOCKIE WILSON: What variety of tomatoes suits your conditions best?

E. J. ATKIN: The Earliana. Through the Leamington district the Earliana is practically the only one grown.

W. J. COOKE: You mentioned that cucumber seed retained its vitality for the second and third year. Have you any data or do you believe that tomatoes are the same. I understood you get less vine and more fruit from second year seed.

E. J. ATKIN: I think you find that in practically all things. As the seed loses the vitality it will grow earlier stuff but less fruit. Half of my tomato seed saved last year was from plants raised from seed that was six years old.

A MEMBER: I grew tomatoes last year from three year old seed, and there

was no difference in the germination of three year old and one year old seed. It ran about 98% under unfavourable conditions.

E. J. Atkin: The seed test depends just on about the same circumstances as the celery does in cold storage. It depends upon the care it receives.

Lawrence Baldwin: In respect to saving corn seed, when you select your cobs from the best plants, is it all right to sow your plot from the seed of one cob. Am I wise in keeping to one cob, or is it better to select two for cross fertilization?

H. D. Clemenson: You get about six or eight different kinds of corn in the second year. I checked a plot last year of thirty two different ears of corn, and none of them came strictly true to the type of corn or cob from which we saved the corn.

E. J. Atkin: It will depend practically altogether upon how near other varieties were to that field of corn. It is very easily mixed.

Q.—In raising tomatoes, you are able to get them very early in Leamington. Can you give us any particular methods in raising them so early?

E. J. Atkin: It would take quite a while to go into the discussion of raising early tomatoes. That would be a paper by itself.

J. Lockie Wilson: What are the main features.

E. J. Atkin: First of all is the proper strain of seed. The rest depends upon the method of handling your plants, and after that it depends upon the kind of soil and the handling in the field. We sow our seed early in the greenhouse, and we give them lots of transplanting and lots of room, then when we get them in the field the main thing is to give them a rich soil and allow very little vine growth.

H. D. Clemenson: Do you find when transplanting Earlianas in your cooling beds that you get crooked fruit?

E. J. Atkin: It would pay, if one only had the time and not too many plants, to get rid of the crown set entirely. We find that our crown set grows a big bunch of fruits about the size of walnuts, or else they grow big crooked fruits.

H. D. Clemenson: My experience has been that it has not been profitable to save seed from the crown seeds at all.

E. J. Atkin: I never try to save seeds from the picking of the crown.

H. D. Clemenson: Selection with us is made by fair selection. We pick the seeds from the plant that has the characteristics we are after.

E. J. Atkin: If you can find such a plant. Oftentimes you will find the nicest looking fruits in the field will not come up to expectation when you cut them open.

E. J. Atkin, upon question about pinching out the top in the tomato plants for early tomatoes, said: The difficulty is that generally your plant sends out too much growth. I try to get my plant as old and hard as I can after putting it in the field.

Q.—Do you use manure or fertilizer, and if fertilizer, how much to the acre?

E. J. Atkin: We grow tomatoes and melons in rotation, and, if we are fortunate enough to get hold of manure, we apply all we can to our melon crop and none to our tomato product. In raising crops for canning factories, perhaps the opposite would be the result. But if you put very much fresh manure on the tomato field you will get your crop at the expense of earliness. We use commercial fertilizer, six lbs. of nitrate soda to 12½ to 15 lbs of blood to 100 lbs. of acid phosphate or bone flour. We use no potash. If your land is very poor, I would increase the amount of blood.

Upon the question of phosphate flour, Mr. Atkin said 26% of .35. It is a by-product in the making of baking powder, but it is horrible stuff to handle. Our application is made at the time of planting in the field. We mix this up generally as we are going to use it. A man follows along and drops a good big handful of that, and the planter comes along and mixes that up with the dirt that goes into the hill. If we are short of help and it is not done then, it is done immediately after planting and hoed in.

Q.—From whom do you get that acid phosphate?

E. J. Atkin: It is just the standard 16%.

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## THE POTATO COUNCIL AND ITS WORK

A. H. MacLennan, Ontario Agricultural College, Guelph

The Potato Council in Ontario is composed of the Deputy Minister of Agriculture, Mr. Roadhouse; Prof. Howitt, the Provincial Botanist; Mr. R. S. Duncan, in charge of Agricultural Representatives; Mr. Hart, of the Markets Branch, and myself, in charge of the potato inspection work. Mr. Roadhouse is chairman, and I am secretary.

The Dominion men with it are Prof. Macoun, the Dominion Horticulturist; Dr. Gussow, the Dominion Botanist; Mr. George Clark of the Seed Branch and Mr. Newman, in charge until recently of the Canadian Seed Growers' Association.

The business of that Council is to try and bring the potato business in Ontario on to a basis similar to that in effect in New Brunswick and Nova Scotia, but more especially on the basis that it is on in Prince Edward Island. The Dominion Government, in the work in the summer time, supplies four men, the Provincial Government supplies three. All of them have worked from my office for the past three years. The idea of the Council is first of all to put it on a basis similar to the other provinces in the East, that means the production of three varieties in the Province. In other words, the standardization of the potato crop. For many years we have been getting into the province all kinds of potatoes, many of them one variety under a different name. So the first thing that was done was the classification of the varieties in three groups, that is, from the commercial standpoint. There are other groups. One that is used to a certain extent here is the Early Ohio group, with pink skin, but as its demand is not very great we have not done any special work on it up to the present, except that where we come across a field of Early Ohio, we give them inspection, if it is possible, in case someone may require them for extra early work.

The main early group, as we list it, is the Irish Cobbler, known by its deep eyes, pink shade around those eyes, the pink purple sprout and the pinkish purple blossom. It is the standard early potato, not only in Canada but in the United States, and is the one that is in demand more than any other for seed purposes at the present time.

The ones that we most commonly find in the early Irish Cobbler are the Irish Cobbler, the Extra Early Eureka, or Early Eureka, as it is commonly called, and another one known as Early Dixie. There are some 10 that go in that group, but the two that we meet most generally are Irish Cobbler and Extra Early Eureka, which are the same potato.

The Green Mountain group is a mid-season group, quite prevalent throughout Ontario, especially in the north country, and through the Province of New Brunswick. The potato is round, smooth, and rather oblong in shape. The

sprout is of a pale colour, almost white, and so is the blossom when it comes up; the stem is rather weak and has a tendency to fall down. The common varieties in that group are Green Mountain, Delaware, New Brunswick Delaware, Gold Coin, Carman No. 1. Down through New Brunswick they demand entirely the Delaware potato. Up through the north country you find practically none grown but Carman No. 1.

In looking the varieties over I would prefer personally to grow Carman No. 1. It is a healthy, strong grower, and I find the constitution of the Delaware is not as strong as it should be.

The third group, and the one that is increasing in Ontario at the present time in acreage planted, is the Rural New Yorker, a rather roundish potato, the eyes in the end being set to one side of the potato; the sprouts are dark purple, the stems grow very upright, even when it has reached a good size. They will droop for a while and start upright again. The blossom is purple, with a distinct white edge on the outside. In this group the one that is known more than any other in this province is a variety that is centred largely at the present time around the Caradoc district in Middlesex County, but it is a variety that is spreading throughout the Province, through the medium of the school fair, and is meeting with a great deal of success. The difficulty with it is the fact that of the three types of potatoes it is the one that does not form its tubers until the plant is nearly grown, so that ofttimes when you dig you find nothing underneath the big vine, but you go back a month later and you find a very large crop. It is the healthiest grower that we have.

Now another line that the Council has been working out, in connection with the school fair work, is bringing in seed from places where we have found freedom from disease. This year we brought in a carload of Irish Cobbler from the Rainy River country. Under ordinary conditions it would not pay to do it because of the freight expense, but from the standpoint of real value, I do not know of any other section that grows the peculiar type of Cobbler that they do. Last year we shipped out of there five carloads to the city of St. Paul, Minnesota, and were given 25 cents a bag over and above the price promised when the goods were landed there, and they were so well pleased with them that this summer, in trying to find out where the potatoes went, they absolutely refused to tell us, because they wanted them known as a Minnesota product.

Another work that we have been doing in the past two years, is helping Mr. Wilson as much as we could in the judging work, especially in the Combined and Ordinary Standing Field Crop Competitions. This Combined Field Crop Competition is doing more good for the potato industry in Ontario than any other method that we have found, outside of the children's work in the school fairs. It is getting what we are trying for all the way through in Ontario, and that is carload lots of table stock. Since we started the production of seed potatoes and the certification work, and the helping out of the judging work, in districts like the northern part of Ontario County, around Uxbridge and Goodwood, the buyers, who formerly brought in large quantities from New Brunswick, are going to that district now because they can now purchase carload lots. Two years ago from the Zephyr district 95 carloads went out.

Last year you asked me to keep you in touch as much as possible with certified seed in the province. I did not get many enquiries in the fall for seed. I was not expecting any, on account of the condition of the market. But our work the past year has been from the standpoint of trying to centre much of the certification work in the southern part of the province in order to overcome the expense on the seed from freight rates. We paid last fall 65 cents

a bag on potatoes from the Rainy River country down here, that brought it up to about $2.10 a bag laid down in Toronto.

A grower in Ontario who has made a special business of seed certification work, R. D. Nodwell of Hillsburg, ordinarily grows 2,000 bags of potatoes for seed purposes only. Wherever I have run across it, and in our work in experimental plots, his seed has given uniform satisfaction. It is not the best in the world, but it is the best we can get hold of, and it is about as free from disease as any we know of. It will stand up in fair test with any of the Eastern grown seed.

Another thing that we have been carrying on for five years has been the carrying on of plots in the various potato growing sections of the Province for the testing out of potatoes from different sections. We had certified seed from Northern Ontario, from Old Ontario, and from Prince Edward Island, because we found that in most cases the Prince Edward Island stock has stood up the best of any of the Eastern Provinces. The results of this, which have been published, do not show a great deal of difference. The New Ontario

Carrot Seed Plants

stock, especially in Irish Cobblers, has stood right at the top each year, but not far ahead of our own stock or the Prince Edward Island stock. The first two years that we carried on the plots, the New Brunswick stock was used, but on the recommendation of Mr. Murphy, who was in charge of the Eastern Provinces for the Dominion Government, we changed to the Prince Edward Island stock. The main thing shown is that where care is taken here in Old Ontario we can grow just as good stock for seed as anywhere else. The main thing in growing them is to keep down the potato bugs and the leaf hoppers, as a great deal of mosaic and leaf curl is spread by the aphis and leaf hopper. If you have any rose bushes around the place watch them, because they harbour the insects in the early part of the season. Last summer we dusted our rose bushes carefully twice with nicotine preparation, and had no trouble in keeping the potatoes right next to them free from both mosaic

and leaf roll, and we had 28 different lots from the various producing sections of both Canada and the United States in that plot.

In carrying on this work we have asked, also, the Fair Boards of the various Exhibitions throughout the Province to help us by cutting down the number of classes in the prize lists of the local fairs, offering prizes for standard varieties only instead of spreading it over a great many varieties. In that way a great impetus will be given to the potato industry in Ontario. The trouble has been that we have had too many varieties and got mixed carloads, and then the dealer cut the price down. If he gets a carload running to the one type, he will give you the money that he would otherwise spend on picking them over, and you can afford to hold him to a fair price all the way through.

There is one other thing that I want to mention. This year there has gone into effect the new law on commercial stock of potatoes and root vegetables. This fall at the annual meeting—because we hold only one meeting of the Council—we brought up a new standard for seed certification and hope some day that it will become law. We want to get some means whereby we can punish the man who sells seed potatoes under false pretences. There were quantities of potatoes which came into Toronto the past spring as certified seed potatoes, that were not and had never been certified. They were certified by the man himself. If the new law goes into effect, and I hope it will within the near future, a man like that can be brought to time. I would have given anything about four years ago if I had been able to have brought a law of that description into effect on a lot of potatoes that was shipped from the northern country down to Brantford. It was a disgrace to the man who sent it. In time he made a slight settlement, but he did great harm; I overcame it partially through the year, but it was the hardest thing possible to combat. If there was a law compelling a man selling potatoes to guarantee them, then there would not be nearly the mixture that there is at the present time.

That brings up a point that I have found the last two years in judging at the Winter Fair at Guelph. Last year there was a variety labelled Gold Coin. The type of the potato led the judges to believe that it was another variety altogether; in fact it was the Dooley. I took three of the potatoes back to Toronto with me, and left them on the office table until they sprouted, and they showed the distinct purple sprout of the Dooley. The man who bought that bushel of potatoes and paid the highest price that was paid, came to me this fall and wanted to know how he got exactly the same potato as he had been growing. He had been growing the Dooley, but wanted to grow the Green Mountain. I knew the grower from whom he got his seed, and on going through his plot we persuaded him to change the name to the variety that it really was.

The same thing happened this year. A variety of potatoes was put in as Bell's Deposit, which is the name under which the Irish Cobbler goes in the Uxbridge district. I took them home and found they were Dooleys, and I notified the man of that fact.

Now if seed certification did nothing else in this province but give us pure varieties it would be a good deal of a help to the man who is trying to grow potatoes right. We have a list made up of the certified seed in the province, which you can get at any time by writing to me at Guelph.

A. N. LeFebvre: A conference took place in Ottawa on February 24, 1920, which resulted in the ruling that things must be sold by the pound. Strong objections are being raised on the part of the Eastern truck farmer who has to stand on the market in cold weather and measure, under the provisions of

this Act, everything out by the pound. It was impossible to have their product all tied up in small packages. Mr. LeFebvre also wanted to know why the word "sound" was left out of the C grade clause.

PROF. MACLENNAN: I realize the position of the Eastern truck farmer, but there is the other side to consider, where the purchaser used to get underweight, and the reason that grade C was put in was to satisfy two sections of the country, British Columbia and Nova Scotia. It was meant to take in simply the stuff that is field graded. You can sell it either under A.B. or C., or you can buy according to A.B. or C. In having potatoes graded under A.B. or C., the purchaser now had some guarantee when he went to the grocery store of getting what he was paying for.

At that conference the idea was to get a workable thing, and that is a pretty hard proposition in this Dominion, when you have every province pulling for its own.

Q.—Is the Canadian Standard a variety of potato or is it a new name for the Green Mountain?

PROF. MACLENNAN: It is of that type and would go in that class.

Q.—Are your field crop inspections all uniform?

PROF. MACLENNAN: Absolutely, all through the Dominion, except British Columbia.

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## GREENHOUSE VEGETABLE GROWING

T. SANDERSON, LEAMINGTON

In the greenhouse, as well as in the open, one is confronted with the three principal questions, *viz.*, what to grow, when to grow, and how to grow. The two former involve a number of external conditions, such as the demand of the markets. We have been told to educate our markets if they do not want what we have to offer, but that has been proven a very expensive procedure, in some cases at least. It is generally better to study the demands of the market and then try and meet them as far as possible. The location of the markets determine, to a large extent, how produce is to be delivered and the cost of delivery must be considered. The adaptability of land and equipment is a factor and then the season of the year is of extreme importance; for instance, tomatoes sell in the fall and winter but there is nothing like the demand there is in the early summer, nor can one command nearly so good a price. Growth is very slow in the fall and winter, and coupled with the extra heat one must apply it soon runs the expenses beyond the returns. We do not expect to make a great deal of money at this time of year; still we like to make a little. These are only some of the questions that must be considered in answering what and when to grow.

Having our facts before us, we must then endeavor to get the largest yields of the highest quality for the least cost. In our own case, we only grow three different crops, namely, tomatoes, cucumbers and lettuce, with sometimes a few radishes to fill in. Tomatoes we grow in the spring and fall, cucumbers in the spring only and lettuce during the fall and up to the early spring. We try to have all lettuce off by the first of April.

We still grow the Bonny Best tomato. We generally try a few of the other varieties of tomatoes every year, but so far have not found what we think is an equal to the Bonny Best, the principal reason probably being that we are very reluctant to give up the exceeding high quality and firmness of the Bonny

Best. I think in this point I voice the object of the growers generally, that we all try to have the quality of our produce as high as possible. In our own case we have been fortunate enough in the past to not have the quality questioned

Various Types of Peppers

by our customers. We have tried out different strains of Grand Rapids rather extensively, but find it too small on our light land. Growers on heavier land I believe are having excellent results with it. There are other varieties that are proving quite successful. Many growers are no doubt using their own selec-

tions which they have been saving for a number of years, until now one would hardly recognize the original variety. There is always a certain amount of gamble involved in procuring seed from a seedsman; a crop of greenhouse tomatoes ties up a lot of money. Of course the more reliable the seedsman the less the gamble, but the best of them are only human and subject to mistakes. However, if one expects "extra special" seed, and that is the only kind that it pays to buy for forcing, one should be prepared to pay the "extra special" price involved in producing it.

We sow our tomatoes in trays about the first of the year and generally figure on getting about five hundred plants out of each tray. When the plants are large enough we plant them into two and a half inch pots where they stay till they begin to bind a little, when they are repotted into 4-inch pots. In the 4-inch pots they are finished, or grown till they are ready to be set out into the permanent bed. We like a good, strong, vigorous plant about 6 or 7 inches high with the pot well filled with roots, but not bound enough to check the growth. In boxing the plants up in the plant house to go to the permanent beds they are trimmed of all laterals and bottom leaves.

This saves the first trimming in the permanent beds.

We generally plant our tomatoes eighteen inches in the rows and the rows 30 inches apart; we sometimes plant them 12 inches in the rows and the rows 36 inches apart.

Immediately after planting they should be watered so as not to allow the plants to flag too much. While the plants are young and soft water must be applied sparingly, otherwise they are liable to get too soft and sappy, in which condition they grow too much to vine and are more susceptible to disease. When we have planted our tomatoes out in the houses we cultivate them both ways with a wheel hoe before putting in the strings. The strings, which are binder twine, are tied at the top to overhead wires which are placed permanently in the houses every 18 inches, while the bottoms of the strings are tied to ground hooks which are pushed into the ground beside each plant. The plant, as it grows, is twisted around these strings, at the same time the laterals are removed. It is important to remove the laterals when they are young and small, because the larger they get before being removed means just that much more of the plant that is thrown away which should go towards the development of fruit.

One hears quite a bit of discussion as to whether it pays or not to hand-pollenize tomatoes, and there are a number of methods advocated. I believe it pays, but the method used must be quick but still efficient. We go over ours with a fine haired brush (the end of a rabbit's tail is good) every few days when the pollen is running; usually from about eleven to two-thirty on sunny days.

When the first truss of fruit is set, or about then, a mulch of fresh horse manure is applied about 3 inches deep. Great care must be taken in applying this mulch if it is at all heated (and it generally is) to see that the ammonia fumes do not burn the plants. The manure should be either cooled before bringing into the houses or water applied immediately if brought in hot. The mulch of course supplies plant food by leaching when surface watering is used, and we use it; it conserves the soil moisture by preventing evaporation and allows the surface of the beds to dry off more quickly after watering, thus keeping a low humidity in the houses. It also prevents the lower fruit from getting dirty by splashing; clean fruit can be packed quicker. When tomatoes are pretty well grown, and especially when they start to ripen, they need enormous quantities of water. We apply water to tomatoes with a hose generally about twenty-five to thirty pounds at the pump.

We wrap all our tomatoes in papers. The number ones in plain white wrappers with the top layers in red coloured wrappers with our name on them. The number two's are all wrapped in plain white papers with two or three tomatoes in each wrapper. The tomatoes are packed in the regular eleven quart basket, fifteen pounds of tomatoes in each basket. Some of our tomatoes are packed in twenty-pound boxes lined with corrugated paper and a coloured label on each end of the box with our name on it.

We sow our fall crop of tomatoes in July and have them pretty well grown before cold weather arrives.

We generally spray our plants with bordeaux mixture, using about one hundred pounds pressure from a hand barrel sprayer. We use the same outfit in the houses. When the fruit begins to develop we use the copper-carbonate fungicide, which is made by dissolving two ounces of copper carbonate in a pint of ammonia, commercial strength, the whole being diluted to twenty gallons. This mixture does not leave any deposit on the fruit. The ordinary tomato worm sometimes gives us trouble in the fall, especially if it has been bad in the tobacco fields. Picking these worms off by hand when trimming seems to be the most effective method; however, some arsenate of lead may be added to the spray if the plants are small.

Our cucumbers are sown in thumb pots, one seed in each pot, and the seed covered with a pinch of sand. These pots are placed on a bed with bottom heat and covered with newspaper until the young plants are up, when the paper is removed. The plants are grown till they are large enough to be repotted, when they are put into four-inch pots where they are grown till large enough to go to permanent beds.

We plant our cucumbers 18 inches in the row and the rows 36 inches apart. We use the same kind of string and ground hooks as for the tomatoes. With cucumbers we generally apply the manure mulch before the strings are put in, because it is easier to work without the strings to bother.

We do not attempt to hand pollenize cucumbers, but employ bees for that purpose, putting them in the house as soon as the first female blossoms are open. Our cucumbers are watered with the Skinner irrigation system altogether, and as they like a moist atmosphere there is part of each watered every day.

The cucumbers are packed in eleven quart baskets; the No. 1's running from fifteen to twenty per basket and the No. 2's from twenty to thirty per basket. This pack demands a fairly short cucumber, and as we use the Rawson Hothouse it works in very nicely. The long dark green cucumber is coming into more favour of late years, but the Rawson seems to sell well, and there is no question of its quality being other than first-class.

So far we have not been troubled a great deal with cucumber diseases or pests. The Skinner irrigation seems to keep the red spider under control. In the latter part of the season the striped cucumber beetle sometimes enters the houses, but they usually arrive too late to do any great damage.

Our first crop of fall lettuce is sown quite thin outside, and let grow till the plants are large enough to be planted into the permanent beds, thus eliminating one transplanting. However, our later crops are sown by hand in the beds, and, when they start to develop their true leaves, are transplanted into beds two by two inches, where they grow till large enough for the permanent bed.

We plant our lettuce 7x7 inches, and generally grow it to a fair size.

We sell all our lettuce by weight, and ship it in boxes and barrels holding from twenty five to one hundred pounds each. I like the weight method much better than the count, because there is no grading and tying together of small

heads; no variation of size to the customer. When a customer orders a pound of lettuce that is what he gets, and he is not particular about the size so long as the quality is good. Of course a good many markets still demand lettuce by count, but I think, where possible, it is always better to sell by weight. The customer gets what he pays for and the grower gets paid for what he sells. Another point I may mention in favour of the grower is, that if the market gets a little draggy and the lettuce is not cut as soon as expected, the grower gets paid for the extra weight put on in that time, whereas if he sold by count, the extra size wouldn't bring any more per dozen.

We grow the ordinary Grand Rapids lettuce. We have tried the dark green variety and like it very well for the mid-winter crop, but it doesn't seem to stand up in the strong sun of early spring. It grows faster than the light green.

We use tobacco stems to fumigate lettuce for the green aphis, and find

Hives of bees prove useful for pollenization

it necessary to smoke at least once a week. If a few aphis appear, smoking two nights in succession seems to be quite effective.

For fertilizers we use principally barnyard manure, which we buy from the farmers and have shipped in by the carload. Most of this manure is fairly well rotted, but some is comparatively fresh. We are frequently able to buy yards of manure two and three years old, but I do not believe this is as good as fresher manure. When it gets too old the life seems to be extinct, and a lot of the ammonia which has leached away has been lost as gas. We apply the manure about as thick as we can plow it in.

All our houses are so constructed that we can use horses to plow and work up the ground, which of course saves a lot of time in labour.

C. E. Post: Do you have to pollenize those cucumbers?

T. Sanderson: We do not pollenize. We put bees right in the house as soon as the first female blossoms are opened. You will find there are a few male blossoms that will open first.

A. M. LeFebvre: Do the bees go back to the hive?

T. Sanderson: In putting a hive of bees in the greenhouse, we figure if we can carry that hive through the next winter without taking the honey away that we are lucky. We have an outside opening on the outside of the hives. We take a pane of glass out directly in front of the hive and put in a movable shutter. Through the summer that little shutter remains open and the bees come in and go out as they desire.

Mr. Clemenson: Do you find any difficulty in any of your water going through the sand?

T. Sanderson: No, we do not put enough on. All we have is just a little mark in the soil, as you might make with a lead pencil and the seed is sprinkled along that mark and a little sand is sprinkled over that seed over that mark. We don't sprinkle it broadcast; we sow it in rows.

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## ROOT VEGETABLES ACT

G. E. McIntosh, Commissioner, Ottawa

*Section 13: Vegetables to be sold by weight.*

The following were official delegates to the Potato and Onion Conference held in Ottawa, February 24th and 25th, 1920, which drew up the Root Vegetables Act, and requested the Minister of Agriculture that it be made law: The programme outlined for discussion at the Conference and forwarded to the delegates previous to the Conference, contained the subject of weights and measures.

Ontario, representing growers: Henry Broughton, J. G. Fleming, J. M. McNaughton. Ontario Department: A. H. MacLennan. Quebec, representing growers: J. E. Parent, Roger Gagnon, John MacAvoy.

On April 22nd, 1920, a copy of the report of the proceedings of the Potato and Onion Conference was sent to the above-mentioned delegates from Ontario, and in addition, to the Erie Co-operative Company, Leamington, to Mr. Justus Miller, Field Crop Specialist, Department of Agriculture, Toronto, to J. Lockie Wilson, Secretary, Ontario Vegetable Growers' Association, Parliament Buildings, Toronto, and to the Canadian Horticulturist, in which paper it appeared in print.

In presenting the Act, the following statement was made with regard to sale by weight: "The present Act with respect to the sale of these vegetables provides that unless a bushel by measure be agreed upon, a bushel shall weigh a specific number of pounds. In practice this is somewhat inconsistent, inasmuch as a measured bushel of any of these vegetables from medium to large size will not weigh the number of pounds prescribed. An investigation was recently made in the City of Montreal to determine the number of pounds which were being supplied to those who bought potatoes in measures less than one bushel. Inspectors made several purchases which were afterwards weighed. In no case was it found that 15 lbs., the legal quantity according to the 60-lb. weight given in the Act for a bushel of potatoes were supplied, the weights varying from 11½ to 14 lbs. per peck. It was the unanimous wish of the delegates to the Conference that the Act should be amended and the unit "one lb." be adopted as the basis of all sales."

Previous to the Act being adopted in the House, the printed Bill of same was widely distributed, not only to those who were delegates at the Conference but, in so far as possible, to those most largely interested. The comments received from all parts of Canada were unanimous in its approval, and in no instance

was the clause referring to sale by weight mentioned, except favorably. Those received from Quebec and Ontario were, in part, as follows:

*Comments on the Bill:*

On May 3rd, 1921, Mr. John MacAvoy, then President of the Market Gardeners of the Province of Quebec, advised having held a convention on the 23rd of April. At this convention all matters regarding the proposed Bill were discussed. It was agreed that the proposed grading of all vegetables, more especially potatoes and onions, be adopted and that a standard weight be established for all produce, especially potatoes, carrots, beets, parsnips and onions.

On May 10th, Mr. Henry Broughton replied: "I have read over carefully the proposed Act, and I am of the opinion that if it is made law it will be in the best interests of both grower and consumer alike. The consumer will also be protected and get what he pays for in weight. I am heartily in sympathy with the movement."

*What other countries are doing in this matter:*

As an indication of the consideration that is being given to this point in the United States, I would like to refer to extracts taken from the 5th annual convention of weights and measures held at Washington, May 23rd to 26th, 1922:

Mr. F. S. Holbrook, Bureau of Standards, Washington: "There are probably 15 States in the United States that require sales by weight."

Mr. Cummings, delegate from Massachusetts: "A Bill which becomes effective July 1st, 1922, and which is similar to that effective in the District of Columbia, abolishes all the established official weights which have been specified for over one hundred years in the State, and requires that all sales at retail be made on the basis of the avoirdupois pound, or numerical count."

Mr. Schwartz, New Jersey: "New Jersey endorses any movement that will put the sales by weight on the statute books throughout the United States. We believe that is the proper way of handling the situation, and favour not only State-wide, but Federal legislation along the lines of sales by weight only."

Mr. Davis, Vermont: "In Vermont the law provides that whenever commodities are bought or sold, they shall be bought and sold by weight, thereby doing away entirely with the dry measure."

Mr. Barron, Minnesota: "I am in the hopes that some day we will have a federal standard law. I hope that the word 'bushel' will be left out of it altogether. I can see no reason why the word 'bushel' should not be eliminated from the English language."

Hon. Herbert Hoover, Secretary of Commerce, United States, in addressing the Convention, stated: "Also, there is involved in the 'container problem' one of your primary questions, and that is the necessity that the public obtain its major commodities by weight instead of by volume. That indeed is the practice in some parts of the United States, but it is not universal. It obviously cannot be made universal in all commodities, but nevertheless there is no greater protection to the consumer than that we should deal by weight with a larger number of commodities than we do to-day."

Mr. William F. Cluett, Chief Deputy Inspector, Weights and Measures, Chicago: "In measuring potatoes, apples and other large irregularly-shaped fruits and vegetables, it is utterly impossible to completely fill the inside of the measure, so for that reason the City of Chicago passed an ordinance twelve years ago which made sale by weight only, compulsory, and eliminated the use of

the dry measure. Gradually, by education, warning and a number of fines judiciously imposed, we have practically eliminated the use of the dry measure in Chicago in the sale of coarse fruits, vegetables and other bulky commodities. Pedlars, without exception, now carry scales and the merchants are all better satisfied, because they now have fair competition, and the public is better satisfied because they can check up their purchases and more nearly get what they pay for than they could before."

The Root Vegetables Act has been in force since June 28th, 1922, and it can be safely stated that the general opinion among growers, dealers, the wholesale and retail trade, also from the consumer's standpoint, is that the provisions of the Act in its entirety are in the best interests of the vegetable industry, and that from all producing commercial sections of Canada a most favourable comment has been received. In one or two instances only has there been any objection to the enforcement of Section 13, respecting sale by weights on local farmers' markets.

Onion and Tomato Exhibit, Peterborough Fair

In introducing new legislation which changes in any way the ordinary or common marketing practise, there is bound to be some little inconvenience, and perhaps, some minor objections.

In order to cause as little inconvenience as possible to farmers bringing produce to local markets, an interpretation has been placed upon Section 13, whereby farmers are permitted to sell vegetables covered by the Act in any kind of a package, so long as the sale is made by specified weight, and the farmer assumes the responsibility for the weight specified.

In introducing the Fruit Marks Act in 1901, many similar difficulties were met and overcome, to the ultimate advantage of the fruit industry, and it is felt that if this Root Vegetables Act, as it now stands, is given the thorough trial and support of the interests which it is intended to benefit, the same results will accrue.

G. H. Poad asked Mr. Gabel, who was representing Mr. McIntosh, whether it was absolutely necessary that a farmer or gardener shall carry a set of scales with his load on the market, and that he weigh everything as he sells

it, or can he put up packages or baskets or otherwise, and guarantee that weight to be in that basket or package.

MR. GABEL: That is exactly the explanation I have read, and as long as the farmer guarantees the weight of the basket or package he is selling, it is quite sufficient to meet with the Government's requirements. We want it thoroughly understood that all potatoes, onions, artichokes, beets, carrots, parsnips and turnips offered for sale shall be sold by weight, and the standard pound avoirdupois shall be the unit of weight used. Provided that when any of the foregoing vegetables are offered for sale with the top leaves attached, commonly termed by the trade "green vegetables," or when potatoes are sold or offered for sale by the closed barrel, this section shall not apply to the same. We do not recognize any container. That is, we do not recognize any bag as a legal container for offering potatoes for sale. But we do accept a statement from the farmer on the market that he is offering for sale, say 15 pounds of potatoes, which should naturally constitute a package or a 11-quart basket, as we have in our district, which would probably weigh 17 lbs. We recognize, if they offer that as 17 lbs. of potatoes, it is acceptable.

MR. ATKIN asked if overweight was sold to that represented, were they liable to a fine?

MR. GABEL: Of course not. To which Mr. Atkin responded that he had been told they were as liable to a fine if they sold overweight to that represented as underweight.

MR. GABEL said the Government did not want anything unreasonable, and the inspectors were asked to carry out their duty in reason, but with enough firmness to ensure the enforcement of the Act.

MR. ATKIN again contended that in some distiicts inspectors were checking growers on overweight just the same as on underweight.

MR. GABEL: That is not the intention at all. The intention is to establish a law and to abide by that law in as fair and honourable a way as we possibly can, the same as in the English markets everything in years has been sold by the stone; and in the United States market it is sold by the pound. And why should you not, if you are selling 95 lbs. of potatoes in a bag, get paid for 95 lbs., instead of probably for 90 lbs. when you were really delivering 95 lbs.?

Q.—Does that include bunched vegetables?

MR. GABEL: No, section 13 provides for green vegetables, anything with leaves on.

Q.—An inspector visiting our market said cabbages must be weighed. In my interpretation of the Act, cabbages are excepted.

MR. GABEL: They are. We don't want our inspectors to be unreasonable. This year we are having our inspectors go from point to point on educational work, and we intend to take up the best part of this season in educating the different growers and dealers, or anyone connected with these commodities in any way, as to how the Act shall be carried out to comply of course with the wording and the meaning of the Act to the best of their ability.

Q.—How will that figure out with tomatoes in baskets?

MR. GABEL: Tomatoes are not included. Tomatoes are a fruit.

MR. LEFEBVRE: Has the inspector power to go in a grower's cellar or root house to inspect those vegetables?

MR. GABEL: No; it is not meant in that way.

J. LOCKIE WILSON: I think it was worth while having Mr. Gabel come here to explain this Act, which he has done very thoroughly.

Mr. Wilson here related how in the early days when this proposition was

discussed, many hundreds of sugar bags weighing only 75 lbs. were sold by the hucksters as bags of potatoes, which should weigh 90 lbs. The Act was changed to make it 90 lbs. That was one of the things, said Mr. Wilson, that we wanted to overcome.

A. N. LeFebvre: We are finding the Act very good as far as the packing and grading is concerned, if the word "sound" was added, but what we are fighting is the small truck farmer who is standing in the market when it is 30 degrees below zero down east. Before you give it your support one way or the other, don't forget your brother members in the eastern end of the Province. Take into consideration those gentlemen down there, and I tell you we really need your sympathy. The law as it is to-day is not to our satisfaction. It is not in the interests of us growers in the East.

The Chairman urged that full consideration be given this matter, terming it as childish to expect the farmer or truck gardener to stand on the market and weigh out one little package after the other. He then asked Mr. Gabel if this law applied only to the growers, or to anyone selling vegetables, and Mr. Gabel responded that it applied to anyone selling vegetables.

The Chairman said as far as he was concerned he would rather sell 90 lbs. of potatoes than sell them as "a bag". On the London market they also had had occurrences of people selling potatoes in sugar bags weighing only 75 lbs., and the man who sold the full weight bag of course had to compete with them in price.

W. J. Cooke: At the Executive meeting held in December we realized that this was going to be a very vital question at this Convention, and I was asked to look into it thoroughly and present it to you from the grower's standpoint. Mr. Gabel has given us the facts from the Government standpoint very thoroughly and answered your questions concisely, and I think it is only right, perhaps, that we look at things from another point of view.

I think we are well satisfied with the Vegetable and Root Act, except as it applies to Section 13. That section says: "All potatoes, onions, artichokes, beets, carrots, parsnips and turnips offered for sale shall be sold by weight, and the standard pound avoirdupois shall be the unit of weight used."

You will want to know how that came to be passed without any representation from us. At the meeting in 1919 we were asked to send representatives from the Vegetable Growers' Association of Ontario to help formulate a law in the Federal House pertaining to the standards and weights of potatoes and onions. We were given to understand that this was in a wholesale way, and we thought this was a good thing. Having in mind that it was the standardizing of the weights and grades of onions and potatoes, we sent men who we thought would represent that end of the industry, Mr. Henry Broughton, a large potato grower, Mr. McNaughton, a co-operative shipper of potatoes, and Mr. MacLennan. We had absolutely no representation of the retail marketer at that convention. Consequently it was passed without representation from us as far as that section is concerned. That meeting was called for the standardizing of grades and weights and measures of onions and potatoes in a wholesale way. Listen to this, on standard containers:

"From the discussion which followed the introduction of a resolution with respect to the question of containers, it was evident that the conference was not in favour of standardization. It was pointed out that in so far as sacks are concerned the requirements of the markets vary, some favouring the ninety pound, others one hundred, one hundred and fifty and one hundred and eighty pound sacks. The Chairman, however, referred to the barrel as a commercial package in New Brunswick and Nova Scotia; also to the crate which was used to a limited extent in British Columbia. It was unfortunate that the delegates from New Brunswick and Nova Scotia found it necessary to leave the city before the question of standard containers was disposed

of, but before leaving, delegates from Nova Scotia had expressed their desire that the standard apple barrel should be made the standard potato barrel. A resolution was finally adopted recommending that the question of containers be left entirely to the dealers and shippers of the various provinces, except in the case of the barrel, and that the fruit branch be requested to take this matter up with the delegates from Nova Scotia and New Brunswick. It was also agreed that the question of determining the weight of a barrel of potatoes in accordance with the size of the standard barrel be dealt with in the same manner."

They absolutely took care of themselves, that the standard was not kept too high. But when it came to the retail marketer, they passed without any objection whatever, the clause on weights and measures. The account of the meeting continues:

"The Chairman, in introducing the subject of weights and measures with respect to the sale of potatoes and onions, explained the requirements of the existing law in this regard, which was briefly to the effect that a stated weight was named for a bag or bushel of onions and potatoes, except where a bushel by measure was specifically agreed upon. A barrel of potatoes was required to weigh one hundred and sixty-five pounds. unless a barrel of specified size, kind or content by measure was specially agreed upon. Growers and dealers have experienced considerable difficulty in obtaining bags which would hold the required legal quantity of ninety pounds, and enable them to tie them or sew them for delivery. Reference was also made to the inconsistency of the measure versus weight system, especially when purchases were made in small measures. Potatoes or onions of medium to large size, sold by a measured bushel, will not weigh the required number of pounds; and investigations made recently evidenced the fact that the consumer, who was compelled, because of financial circumstances, to purchase these commodities in small quantities, was paying an exorbitant price in proportion to the quotations for the larger measure. In one of our largest cities purchases were made of potatoes by the peck from various retail stores, and in no case did they weigh fifteen pounds, the weights varying from ten and a half to thirteen and a half pounds. It was quite obvious from the discussion following that the opinion of the Conference was that the present law should be amended and that the unit of one pound should be adopted as the basis of all sales; and a resolution to this effect was adopted unanimously."

Consequently, Section 13 was the result. Now, I claim that we had nobody there representing us in that capacity. They passed it because there was nobody interested.

I quite understand Mr. Atkin's viewpoint. If I was shipping vegetables in baskets to a commission house, it would be perfectly feasible for me to weigh them and ship them. If I was doing a wholesale shipment business of any kind where everything is put up in standard weights, it was quite feasible for me to weigh it. But when I go to market with a mixed load, piled with big boxes of celery and cabbage, I don't know what the demand is going to be, I can't tell how many 10 cent lots of roots I will sell, or how many 15 or 20 cent lots, and in my waggon, no matter how big it is, it would not be feasible to have those 100 or 150 different lots measured out in paper bags and stuck in there. It is not possible under the retail marketing conditions such as we have in the east to follow out that law.

The only other alternative is to take scales on the market. If we had a covered market, if we had a covered store, it would only be a matter of hiring one extra hand to handle the scales. But sometimes the market will not start until 10 o'clock and if between then and noon we had to measure out between $20 and $50 of small lots—we could not possibly do so. Just as the market starts, it may begin to rain, and we have an expensive set of scales and paper bags. Now the members in this conference who are not interested in that end of the game cannot judge it. It is only the men who are interested in the retail trade in the open market who can possibly see the defects of this law, and the defects are there and I cannot see how they can be overcome.

A. N. LeFevre: Will the City of Kingston let you weigh with a set of scales that has been travelling over a rough country road, that has not been tested? The City of Ottawa will not let you weigh with a scale that has not

been tested to find out if it is in good condition, and the only way to find out is to have the inspector test it at ten o'clock when he comes around and the market is about over by that time.

W. J. Cooke: I have thrashed this out and I have been down to see Mr. Burrows at Ottawa, and I have pondered over the Act to see if we could live up to it, and unless we are prepared to spend much more money then we do now, in our retail trade, we will either break the law or go out of business on roots and vegetables of that kind. Then, on the other hand, as I said to Mr. Burrows, if we have to stand the courts on this question and are defeated—there are probably 100 small retailers coming on to the Kingston market, farmers with a surplus of products, who just come a few times and they can't bother with scales—it would not be worth it. They must be prosecuted in order to protect

A good crop of onions

me. That only means driving them off the market. The consumers of Kingston like the retail trade on the market, because they can buy from the producer direct and get a fresher product and more reasonable in many cases.

Here is the result. I never had a consumer say to me that they wanted a law like this. But I can quite see that from the standpoint of the wholesaler it is quite correct.

C. E. Post asked why the vegetable growers, as producers of foodstuffs should be put up against verifying their weights, when if they went to a retail store, and bought what was sold to them as a woollen shirt, there was no guarantee that the product was wool, as the merchant does not guarantee it.

W. J. Cooke: We do not want to evade any responsibility. Our whole point is that we cannot possibly do it without very great expense. If we could live up to it by having our stuff wrapped before we leave home, I would be glad to do so, but we can't do it, you can't anticipate requirements.

## ADDRESS

A. Goulet, M.P.P., Russell

There is nothing I have at heart more than the success of the farmers, because whenever the farmers succeed we will all succeed. The farmers are certainly the foundation of the country, and before passing any law of any kind, the Government of a country should have at heart the welfare of the farmers and of the growers in general.

I was asked by the farmers and gardeners in the County I represent to come here today and help their representative, Mr. Lefebvre, to try and amend Section 13 of the Vegetable Act. When that act was passed, as Mr. Cooke has just said, I don't believe that the gardeners and farmers were asked their opinions, and if I can judge by the Act, it was endorsed by people who are used to trading on big scales only. If you come down to Ottawa where we have from zero to 13 degrees below in the winter time, and see there the small vegetable growers dealing directly with the consumers on an open market and selling as low as half a gallon of onions and half a gallon of potatoes at a time, you will recognize at once that it is absurd to ask those farmers and growers to have a scale and to weigh whatever they have to sell. I really believe that the thing cannot be done, and if those people who pass those laws had a few days' experience on a cold day in Ottawa they would change their minds. If the Government built some big covered and heated markets, then the thing might be put in effect, but they don't intend to do that.

My constituents have nothing to say about the big weights. They are ready to sell potatoes by the bag or by the pound, but they want to amend the law on small quantities, and that is why I am here today, and I think it is in your interest as well as the interests of my constituency that that law should be amended.

Moved by W. J. Cooke, seconded by A. N. Lefebvre: "We the Ontario Vegetable Growers in convention assembled, wish to express our sympathy with the general provisions of the Root and Vegetable Act as it applies to standardization and the weighing of vegetables in the larger packages.

"We, however, wish to express our unanimous disapproval of section 13, as it applies to the weighing of vegetables by the producer in his retail trade, on the open market.

"We believe it to be a physical impossibility for us to conform to this section of the Act, under our climatic conditions, and that it will cause a diminishing of the producer to consumer trade to the detriment of all concerned. We very strongly urge that an exemption be made of section 13, as far as it affects the grower himself in his retail trade, and that a copy of this motion be sent to the Hon. Chas. Murphy and Hon. Mr. Motherwell." Carried.

Harper Secord: Our friends from the east have told how this affects them down there. I have had practical experience in St. Catharines for a good many years in the retailing of vegetables, and while we don't have such cold weather, I am exactly in the same position as they are. I don't see how that law is going to be carried out in our local market in St. Catharines.

J. Lockie Wilson: I understand that that resolution is going to apply only to the actual growers, the actual producers, not to the hucksters.

The Chairman: This question is a vital one, and I believe where one grower is affected by any measure, or any community is affected, that, if possible, we should all support such growers.

A. N. Lambshead, Burlington: We handle all our product practically in baskets. We do not handle our parcels in half gallons or gallons. We retail in baskets, and I understand as long as we keep a minimum weight of 17 lbs. for the basket and its contents, we are safe from the law. So you see this does not really affect us vitally, but as it does affect certain of our members, I think we should support their cause.

Mr. Goulet, M.P.P., then informed the meeting that Hon. Chas. Murphy had asked the Hon. Mr. Motherwell not to put that law into force on the Ottawa market until he had heard from the growers in assembly today.

J. Lockie Wilson: I don't think when that Act was passed that sufficient time had been given to look into the matter, nor do I think that the members of Parliament at Ottawa or the men connected with the passage of it wanted to do an injury to our people, but it is just owing to the fact that they were not quite clear as to the position of many of our growers.

Moved by Mr. Secord and duly seconded and unanimously carried: That the thanks of the convention be tendered Mr. Gabel for his attendance.

Field of Strawberries Irrigated

## MELON GROWING

### Harper Secord, St. Catharines

While melons are an adaptable crop and are commercially grown over the thickly populated parts of our Province, they succeed best in certain specified areas. The Leamington district having the advantage of soil and climate, ships the first melons, but Aldershot with a similarity of productive conditions and having proximity to larger markets holds the distinction of being the largest producing centre in Ontario. These two localities have sandy or gravelly soils, which type of land is early, and earliness is the most important factor from a commercial standpoint. The Niagara District grows many melons under variable soil conditions.

Going east to Kingston we find melons doing extra well on a rich heavier soil of limestone formation, and in the Ottawa valley, and particularly in the

vicinity of the capital itself, we find the science of melon growing as represented by the Montreal method well demonstrated, both in method of production and point of profit.

But to be candid with you here today, I am not the melon grower that I used to be, but I have neighbors, members of our branch of this Association, who are entitled to all the praise I can give them in this brief subject of mine, and if my success in the past has in any way contributed to what others are doing today it only serves to emphasize the reciprocal value of our Association as vegetable growers. Our market is the local market at St. Catharines, and St. Catharines is on the Provincial highway, and the highway leads to Aldershot, and when your market gets deluged with great truck loads of melons, offered at a price that completely demoralizes the local situation, you feel that you are getting crowded off the melon map. But after all, quality is the determining factor and if a grower can establish and maintain a reputation on the basis of quality and fair dealing, he need not fear so much the competition of the ordinary kind. By this I would not have you infer that the melons of one locality are inferior to those produced in another, but some districts have the advantage of earliness, and there is a tendency at the height or end of the season to dump in the markets of the other growers. And since the advent of the motor truck along with good roads, it is evident to the majority of us vegetable men that a rapid change is taking place in our industry, and that from now on, distant areas, especially suited for certain vegetable crops, are going to increasingly compete with us in our local markets. Besides this, that other new-born institution, the roadside market, combined with what is seemingly everybody's ambition to own a motor car and get on the road with it, are reasons in my belief for us to expect a less local and more general extension and, perhaps, keener competition in vegetable growing.

But to tell you how I grow melons, we buy our seed and hope to get the kind we order. The first week in May we cut clean sods about four inches thick, free from foreign materials, especially twitch grass, and after turning these upside down in the hot bed or cold frame, we cut them into squares of about four or five inches with a large knife and in shallow depressions in each sow five or six seeds. After covering, we fill all the interstices between the individual sods with earth and water well, cover over with newspapers and put on the sash and try and maintain a temperature for the next few days of from 60 to 80 degrees. In a week they should be up, when we begin to harden them off, taking the sash off about a week in advance of field planting, which is generally about June 1st. Land for growing melons can hardly be too rich, an abundance of humus being especially desirable. We like to plow down about May 15, a rye or preferably clover sod, on which plenty of well-rotted or short manure has been spread during the winter months. We roll this, more than once if necessary, and cultivate thoroughly until planting day when we mark it out 5x7 feet, the wider distance the way we are going to pick. It is important in planting to select a suitable day, and also not to be in a hurry to get them out. Continued warm and settled weather is demanded, for melons are a tropical plant. They do not need a frost to kill them. A few days of cold raw wind will do this nearly as fully. We start cultivating immediately after planting, and melons perhaps should have more frequent cultivation than ordinary vegetable crops. We cultivate deep in the beginning and shallow later on, but it is important to continue the operation just as long as it is possible to get through them without material injury to the vines, and as it is only natural for every plant's roots to have the protection of its own foliage, we like to see them grow, and to this

end we should assist and copy nature, for the most casual observer ought to notice that nature's every effort is to cover up the bare ground. I wish I could bring to you today a complete bug remedy. Unfortunately I cannot. They persist despite all the remedies suggested for their elimination or control. They are bad in the direct damage they do in the beginning, besides as carriers of disease they spread blight and wilt, often disastrous affections later on. We poison our plants before we put them out, following up in the field with poisons and repellants, besides pulling up all sickly or suspicious-looking vines during the season. Last year the cutworms easily held first place in damaging the melon crop, and of the means adopted for their control the poison bran treatment was perhaps the most effective. Successful marketing depends to a great extent upon judicious harvesting. It is a mistake to pick a melon at all on the

Albino Tomato

green side, and careful and systematic gathering should almost eliminate waste and over-ripeness. We should do everything that is practically possible to promote and preserve a healthy foliage, which means that the tramping of vines and tolerating of disease in the patch should be carefully avoided. Observance of these rules, provided we have a season of average sunshine should give us quality in our product, and quality more than anything else will insure sales and maintain us in the market when an oversupply of the ordinary stuff goes begging.

In conclusion, I am a cover crop enthusiast. I have been for years, and the longer I practise this easy and economical method of soil improvement, the more it commends itself to me as the cheap and natural way of solving the fertility problem which is becoming increasingly difficult of solution, on account of the comparative scarcity of horse manure. The melon crop at both ends of the season affords an excellent opportunity to grow a cover crop. We sow at last

cultivation, sweet clover or hairy vetch, and usually get a good stand, and again in the spring on account of the comparative lateness of melon planting we again reap the maximum benefit from the use of these green manures.

Q.—How do you poison the striped cucumber beetle.

HARPER SECORD: I don't know if they can be poisoned.

Q.—Have you tried the dust?

HARPER SECORD: Yes. The kind of dust we use is the nicotine?

Upon question Mr. Secord said they grew for the local market Osage and Irondiquoit melons. They are not good for shipment, but they have a nice salmon colour and are good for the local market.

G. H. POAD: You said that it was necessary to have the ground very rich. I have found in some sections—I come from the London district—the very finest melons growing on the very poorest soil. How do you account for that? I admit that they make the hills rich, but the soil generally is poor.

HARPER SECORD: The soil you have reference to is the same kind that they have at Leamington and Aldershot. They grow lots of melons at Aldershot, and they have them a couple of weeks ahead of us, but the vines all fall down, and I am speaking today from a quality standpoint. Their quality is not as good as ours.

Q.—Do you tie or hold down your melons in some way?

HARPER SECORD: In the water melon patch I plant a hill of beans and then one of melons, but the others do not need any tying down.

W. J. COOKE: Is there any special fertilizer that is more adapted than others?

HARPER SECORD: No, just the ordinary commercial fertilizer.

## INTRODUCTION OF THE NEW PRESIDENT

MR. POAD then introduced the new President, MR. W. H. STEWART, Aylmer, Quebec.

MR. STEWART in a few warm words expressed his pleasure in finding himself at the head of the Association, of his membership in which he had been so proud.

He referred to the fact that he had been honoured with the appointment as a delegate to the Horticultural Council which had been in existence for about a year now, and said: I understand that this Council is a clearing house for those various questions that are brought before the Federal House, and especially before the Minister of Agriculture. Now it will fall on me possibly as a representative to fight pretty hard when that question of the Root and Vegetable Act comes up before that Council. I can only say that I will do my utmost.

He expressed his gratitude to those present who were not affected by section 13 who had supported the men from the East.

## THE SEED CONTROL ACT

W. J. COOKE: I represented you in a conference two or three weeks ago in Ottawa to decide some points as to a new seed law, and a good many points came up at that conference, and with the representative, Mr. LeGare of the Vegetable Growers of Quebec, I was very much alone against a solid phalanx of seed firms. So if I did not do as much as I should have done you will understand why.

I urged at that meeting to have the germination of the seeds put on the package so that we would know just what we were buying, but with six seed men against me, we failed. But this much we have. If the seeds in any package are not up to a certain standard of germination they must put that germination on the package. If there is no germination on the package it must be up to a certain standard, and it would be well for you all to get a copy of the Seed Control Act which has in it the standard of germination which must be on every package of the seeds. I was asked to present to you the law of germination and ask if you are satisfied with it. I will read the standard of germination of our main garden seeds. They must come up to that standard or else there must be printed on the package the standard of germination that is in them:

Mangel and beet balls, 90% germination.
Turnip, swede, rape, radish, cabbage and cauliflower.....90%
Spinach, carrot and celery.....80%
Parsley and parsnip.....65%
Onion, leek and tomato.....90%
Lettuce.....95%
Cucumber, melon, squash and other cucurbits.....90%

In reading that over, I think it very fair. The majority of those seeds run from 90 to 95%, and if they are less the law says the vendors must stamp it on the package. We are satisfied to know if our seeds run from 90 to 95%.

Mr. Cooke then asked if there was any objection to the percentages of germination specified?

A member said the 65% for parsley and parsnip was considered very low in England.

W. J. Cooke: It is low, but we are doing considerable objecting, and I think it would be well for us to advise the seed branch that the law is satisfactory as it is today.

In reply to a question, Mr. Cooke responded that Indian corn was included with cereal grains, flax, and millet, 95%.

Moved by Mr. Kitney, seconded by Mr. Bamford, "That we agree with the present minimum percentage of germination as it is in the Seed Control Act now." Carried.

In connection with the tariff, a member from Burlington said: It was stated at Burlington that the jam manufacturer imports fruit for manufacturing the jam, and afterwards exports a certain percentage of it, but that he covers the whole thing with a blanket of exportation, and in that way he gets over with what little protection they have.

Harper Secord: I can answer this question. I am a fruit grower in the Niagara district, and we have sold thousands of dollars worth of fruit to the Dominion Canners, and instead of paying the Canadians their price for fruit they go across the river to Lewiston and buy the fruits at the same price, because it pays them to do that. They not only get a rebate on the fruit that is canned but also on the sugar that is put into it.

A Member: I wish to call attention to the tariff on tomatoes which is 30%. The tomato that hurts us more than anything else is that southern tomato grown in the open and picked and shipped green which comes on our Northern markets. As you all know, the quality is very low. The tariff charged on that commodity is 30% f.o.b. shipping point and at shipping point tomato is worth eight or nine cents a pound. By the time it gets up to the border, it does not mean anything. Our consumers are paying a good price on these tomatoes and the money is going to the United States growers, and practically all the money that remains in the country is the little profit made by the retailer.

If that tariff were changed to say five cents or ten cents a pound, it would be a more equitable arrangement.

C. FRETZ: The resolution that is in preparation will cover that.

A LEAMINGTON MEMBER: 30% added on to eight or nine cents a pound on tomatoes when they leave Florida does not produce much revenue.

MR. WILSON suggested that the duty be fixed on the value at the port of entry in place of at the place of shipment.

MR. CLEMENSON advocated a rate of duty per pound, no matter what the price is charge a specific duty instead of an ad valorem.

E. J. ATKIN said that would be no protection to the Canadian grower, if the American stuff came onto the Canadian market at a high price and the Canadian goods went on to the American market as a low priced commodity.

C. FRETZ urged that it is not a question of not wishing American fruits and vegetables to come in, but the duty should be high enough so that the Canadian product could compete with them.

Forcing Rhubarb in Basement

A MEMBER: The importation of southern head lettuce has affected adversely the Canadian greenhouse men.

Moved by MR. ATKIN, seconded by MR. LEFEBVRE, and unanimously carried: "That the delegates of the Ontario Vegetable Growers' Association in convention assembled from all parts of the Province view with alarm the action of the U.S. Congress in enacting a prohibitive tariff against Canadian industries. We, their nearest neighbors, are their best customers. As they have erected trade barriers so high that interchange of our products is made prohibitive, we would respectfully request our Federal Government to take such steps as may be necessary to counterbalance United States restrictive measures, that the duty be payable on fruits and vegetables according to their value at the port of entry, and that copies of this resolution be forwarded to Right Hon. MacKenzie King and Hon. Mr. Motherwell."

A vote of thanks was tendered the past President and the Secretary for their very kind services during the convention. Carried.

## CO-OPERATION

### Hon. Manning W. Doherty, Minister of Agriculture

The reason why I always embrace every opportunity—not being a politician—is that I like to get close to those who are actually producing in order that I may in some degree become aware of the problems that are confronting you each and every day as you go about your work. The Department of Agriculture is an important department in this Province because agriculture is its basic industry, and with its various branches carrying on work a great deal of money and a great deal of effort can be wasted unless those who are in control and directing the efforts of those within the department have some clear idea of the real problems, not alone the theoretical ones but the practical problems that you men meet each and every day as you go about the carrying on of your work. Now for that reason I take every opportunity of meeting the farmers in all the different branches so that I may be better able to direct those who are in control of the various branches, so that their efforts may be directed to the solution of those problems.

I am delighted to learn from your secretary that you have had probably your most successful convention. Vegetable growing is a very important industry in this Province, and to my mind is only in its infancy. The Department of Agriculture is doing its best to assist you. I do not for a minute claim that the work which we are doing is all that we expect or could hope for, but I can assure you that we are prepared to make our work fit in with your practical undertakings, so that we may be efficient. We are delighted to have from you suggestions as to how we can make our work more effective. I want you to feel that our Department of Vegetable Growing at the College at Guelph, and every other place where we carry on the work, belongs to you, the growers, and we desire to direct the efforts of those in these Departments to help you successfully carry on your business.

I am not an expert vegetable grower, and do not pretend to be one. As a matter of fact my farm is a very heavy clay, and many years I find it cheaper to buy vegetables than to try to grow them, because I am only a few miles from the vegetable district of Dixie, and we buy vegetables there better than we can grow on our stiff clay land. But I do know that in your branch of vegetable growing there must be very perplexing problems.

One of the problems that occurs to me, and one on which I would not dare offhand to offer a solution, is the problem of the proper marketing of your products. Your secretary gave me the opportunity of speaking to you to-night on the matter of developing a co-operative market. I do not intend to take advantage of that because it is a heavy subject, and one which requires a lot of time to cover in any kind of a proper manner. The vegetable grower—yes, and the farmer in every other branch of agriculture—in order to succeed—and we are going to succeed—must utilize business methods, and to my mind the marketing of our farm products in this country is as far from being businesslike as it can be. There is no other business that could have survived the crude wasteful marketing methods that we have been practising; no other business than farming could have withstood it. If the same methods would have been followed in industries, industries would have been smashed ere this. Agriculture has been able to stand up under the tremendous difficulties under which it has travelled these many years.

Not being an expert vegetable grower, I would not dare venture to outline

to you what would be the proper method for you to adopt, nor the proper connection that you should build up to handle that problem, but I do say this: That you can build up such an organization, and there are certain fundamental principles that you must observe in the building up of it, and there are men who know, who possess the expert knowledge to direct you if you should undertake an organization of that kind.

The problems confronting the vegetable growers in the marketing of their produce are different from those that confront the fruit growers. The problems that confront the vegetable growers are different from the problems that confront the marketing of dairy products or of tobacco. The fundamental principles are the same for all, but the character of the machinery to be put to work is different. And if the vegetable growers of Ontario should at any time decide that it was advisable for them to plan out such an organization, I can assure you that the help that you need for such work will be given to you. There are experts in this country or on this continent, men who are thoroughly capable of sitting down and advising as to the best possible machinery that can be built, and I am anxious when any of the growers undertake work of this kind that

G. Coltart's Vegetable Exhibit at Waterloo

they shall have at their hand the best machinery. It is disastrous to start out with a machine that is not properly constructed to carry out the work that you have in hand.

I can assure you it is a pleasure for me to be here. I wish your Association and its members every success.

The year that we have gone through has been a trying year for farmers in every branch, and the years that are ahead of us are going to be trying years. But even when you are feeling most keenly the experience of last year, keep it in mind that, as bad as 1922 was for us, there was no part of the world carrying on agriculturally that has come out as well as we have. They have all suffered and suffered severely, and I doubt if any part of the world has come through in any better shape than we have here in Ontario. But we, in the years ahead of us, if we are to succeed, must neglect no branch of agriculture. There are branches that in the years gone by have been overlooked, or sneered at as of no importance. We have to build up our vegetable growers' industry. There is no particular reason why we should be spending so many hundreds of thousands of dollars on importing vegetables into this country. We can grow just as good

vegetables here as can be grown on any part of this continent—perhaps not in the same month—and we can grow a very much greater percen age of the vegetables consumed in this country than we are producing to-day.

We have to build up our poultry business and our bee business, so that all our products in this country will be sufficient to carry the load that we have on our shoulders. The only way we can carry it and carry it with ease is to develop every possible avenue in production. Any assistance that our Department can render will be given you, and I wish you every success.

Interesting addresses were also delivered by J. A. Pinard, M.P.P., Malcolm McVicar, M.P.P., J. W. Freeborn, M.P.P., Alfred Goulet, M.P.P., W. H. Stewart, W. J. Cooke and Dr. Stevenson, M.P.P.

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## THE IMPROVEMENT OF SOME OF OUR VEGETABLE CROPS

T. F. Ritchie, B.S.A., Ottawa

In past years the standard varieties of vegetables were accepted in many respects as the zenith of ambition, at least so far as the needs of certain localities were concerned. These varieties, however, when tested under conditions of diverse kinds proved to be lacking in some essential. With this in mind and the opening up of the vast tracts of unknown country first to the west and later to the north, this need for earlier maturing and hardier strains than the older varieties began to loom up more prominently.

Where market demands are peculiar, as is noticed to be the case on all the older markets visited by strangers, the customs in vogue, the methods of handling the produce, the supply in relation to the demand for certain crops at that season of the year and the possibility for novelty crops are some of the striking features which present themselves.

Our work at Ottawa is divided into two classes, namely, improvement by cross breeding and selection, and the selection of the most desirable types from the older varieties for disease resistance and productiveness.

With a view in mind to serve the large number of demands made upon our seedsmen for a means of filling many of the gaps in the chain of supply and to meet all these peculiar conditions, improvement work has been in progress now for many years with the result that new varieties are available to-day which supply to some extent these needs. The successful accomplishment of this work has been obtained through the medium of plant breeding and selection. By plant breeding quite distinct new varieties have been produced, while they possess a combination of the characters of the parents, yet these same varieties are quite different in habit of growth, earliness, quality and hardiness. If, as we know in the case of our earliest varieties of corn, that they are dwarf in habit, producing quite numerous suckers and producing ears that are eight rowed and from three to four inches in length with flinty kernels, here we have some of the known characters of a type of plant which is of value in improvement work. It is known at the present time that if a new yellow variety of sweet corn can be produced, which would possess the good qualities of Golden Bantam, and the earliness of some of the Squaw corns of the prairies, another gap in the chain of supply would be filled. This is merely cited as an example. The new variety Pickaninny which has just been introduced, though dark coloured, somewhat resembling Black Mexican, can be grown in a field beside the best early variety commonly known, without the slightest danger of crossing. This is a very fine sweet table corn, despite the fact that the ears average about four and a half inches in length and are eight rowed. Then this corn once

introduced can be grown beside Bantam; marketed during an interval when there is no sweet corn for sale and be over before the standard sorts are ready. For such localities as northern Quebec, northern Ontario, and most of the western provinces, this corn has proved very satisfactory. Our proof of this is the fact that the numerous experimenters throughout the country have reported to this effect.

In the *Market Growers' Journal* of January 15th, 1923, Pickaninny Sweet corn is advertised, "Seed for testing only." The seed is on sale at $1 for two ounces. It is worthy of mention here that Canadians have had an opportunity to obtain this corn free of charge from the originators at the Central Experimental Farm, Ottawa.

Tomato improvement is another line being carried on for the purpose of getting the best possible variety possessing earliness, as applied to producing a reasonably large percentage of fruit during the first two weeks, and we have been able to obtain from 12 to 12½% of ripe fruit within this given time of the season. While such a variety as Alacrity is not suited to Eastern Ontario, we find that in the northern parts of the Province and in the western provinces this variety has met with quite general approval. We have at the present time new strains of Alacrity which are giving much promise for the future.

Bean improvement has brought some very valuable additions to the present long list of varieties. Our new pole bean No. 1 which is a light coloured green pod, is going to prove valuable as a cropper, and from the point of quality. From indications up to the present, it is quite free from anthracnose.

In connection with the garden pea crop, we have been carrying on improvement work quite similar to that in connection with beans. We are striving to obtain high yielding sorts, and so far our work has been meeting with considerable success. In some of the crosses which have been made, individual plants have been found which yielded over 100 pods per vine and averaging around five peas per pod. In one instance the vine was only 40 inches in height. Through selection from the highest yielding strains of peas, especially English Wonder, very appreciable results have been obtained.

Those of you who have spared time and space to test any of our introductions may not have reaped very great profit from any of the tests, but you have contributed greatly toward helping the Experimental Farm system to ascertain the true value of these new varieties in your locality. If any of the growers can help us in connection with this work in the future, they are helping their fellow-men in other parts of the country if not helping themselves.

If any of you are interested in any of these new strains that we have we would be very pleased to supply you with a small quantity of seed and let you test them out. Any information that you could give us about them would be of great value. It simply means that practical men in the field, in which you are, can tell us whether these things are of value or not. If you will co-operate with us we will endeavor to do our very best for you.

Mr. Emslie of the Chilean Nitrate Committee: Last month I addressed the Nova Scotia Fruit Growers, and at that time took up the subject of fertilizer legislation, discussing chiefly the provisions of the new Fertilizer Act. I will refer to one or two of the important changes made in it. I do not suppose there is any other body of men engaged in agriculture or horticulture that is more interested in fertilizers than the vegetable growers. In discussing this matter with other bodies, I seldom found any that are familiar with the provisions of the Fertilizer Act, and know that the Government had taken this means of protecting the farmer from being imposed upon. The fertilizer manufacturers cater to the demand, and if a fruit or vegetable grower wants a cheap fertilizer

they are able to supply him. It is not really cheap but low priced, because he may be paying much more per pound of plant food in buying a low priced one than a high priced fertilizer. In one respect I think the new Act is very superior to the old, that is we have fixed a minimum percentage of plant food which must be present. That is, formerly we would find such blends as 1-8-1. I suppose every fertilizer manufacturer had one, not that they wanted to have that low grade stuff, but they wanted a share of that trade. Now I think it was really in the interests of the reputable manufacturer, as well as the consumer, that a minimum was fixed below which they could not manufacture a fertilizer. That is we fixed the minimum at 2%. Under the new Act no one can claim nitrogen unless there is at least 2% present in the fertilizer, and no one can claim potash unless there is at least 2% present, and the lowest grade fertilizer

possible must be 2-8-2. And every fertilizer must have at least 12% plant food. So I think that was decidedly a step forward.

Another restriction caused by the new Act: A crop name may not be used in describing a fertilizer. The tendency has been for the purchaser to depend on the name in procuring the materials for different purposes. That is also a step in advance.

Another thing provided for by the Act is the prohibition of duplicating in fertilizers. As a result where last year we had 93 registrations of fertilizers in Ottawa, this year there were registered a total number of 17 fertilizers. And while the total number of brands registered last year was 583, this year there were only 140 registered.

Another provision—one of the most important probably—is the Advisory Board which is composed of nine members, three representing the consumer. I was appointed as representative for the Ontario consumer. I happened to

be in the Department at the time, and although I tendered my resignation when I assumed my new position, it has not yet been acted upon or accepted, so that I am still in touch with matters on the Advisory Board. This Advisory Board has on it three representatives of the consumer, three representatives of agricultural chemists, and three representatives of the manufacturers. The Act is administered under the Seed Branch of the Department of Agriculture, Mr. Clark the Seed Commissioner and Mr. Peart. The board has the consideration of changes of regulations, the Act itself, of course, cannot be changed except by Parliament, but the regulations can be by the Advisory Board.

I think the provisions of the new Act will tend to improve the situation, and I think the great number registered has proved very confusing to the consumer in making selections.

A. N. LeFebvre: The Province of Quebec not only helps the vegetable growers in any matters they can, as far as giving them machinery of $25,000 for tomato canning to anyone who wants them. I am sure the Province of Ontario would do as well but the Government may not be aware of our requirements. The Government of Quebec gives seed free of charge in each community.

Ontario has done a lot in co-operation, but not as much as could have been done, because it was not educated to it. Quebec this year started a campaign to study the market in honey. Our Government should do that. If they see a good thing they should give it to us. The Quebec Government sent a representative to England to investigate the possibility of placing an order of honey. The result was placing 1,000,000 pounds of No. 1 white honey. Remember that is quite an amount of money. If we moved that from Ontario we would be getting good money yet. They did not have quite enough from Quebec, and some of our Ontario honey was shipped to England with theirs. 80% was paid on delivery and 20% is still to come.

The Quebec Government spent $100,000 just to take from one end of the Province to the other an exhibit, accompanied by speakers to show the people what they grow in the Province of Quebec. We are only asking a little paltry sum from our present Minister of Agriculture. He said to-night he would do his best in our interests.

We are satisfied with ourselves here but we are not doing enough to encourage the industry.

G. H. Poad, London: This Association is composed of big men with a big job on their hands. You know I sometimes think that we estimate our job as a small one which is one reason why we are not progressing faster than we are. We often judge a man by the job he holds. I saw a man the other day scraping the street. I said to my friend who was with me: "There is a poor fellow, he never had a chance in life," and this man said: "That man does not know very much or he would not be on that job." And on investigating I found that he was a clever man, a man who ought to be doing a big job; but he had a low estimate of himself, and he was simply occupying a very small position in life. Vegetable growing is a big job. The man who can grow vegetables and grow them as perfectly as they are being grown to-day in Ontario, is doing good work. At Detroit, where some of our vegetables were exhibited a few years ago they came to Mr. Eborall and myself, and told us such specimens of vegetables could not be grown in the United States.

What has impressed me more than anything since belonging to this Association is the fact that men have been willing to give what knowledge they have—and it has cost them a lot to obtain that knowledge—to other members. So it is up to you to give out as much as possible to your fellowmen, so that when you are dead and gone the rising generation will take up the work and

carry it on to the betterment of the country in which we live, so that eventually we shall become the greatest country in the world.

F. C. HART, Markets Branch: I would like to repeat one or two things on the same subject on which I have previously addressed you, and that is on co-operative marketing.

From my observation of the growers of the Province of Ontario, producing various vegetable products, they are the only producers perhaps who more than any others practise a system of marketing direct or almost direct to the ultimate consumer, selling either to the householder or to the storekeeper who sells direct to the consumer. When the subject of co-operative marketing is broached to them the natural tendency is to think of marketing directly to the consumer or to the storekeeper. In all other products there has grown up a system of marketing. In wheat, for instance, there are a lot of middle men, and as a matter of fact the wheat producer in Saskatchewan gets more out of the consumer's dollar for flour than your vegetable growers growing lettuce around the city of Toronto get out of the consumer's dollar for lettuce. One reason for the high cost of marketing among vegetable growers is that they practise too largely an expensive system of individual marketing, and prevent a specialized system from growing up which would be more economical than the individual marketing at the present time.

So one word in connection with your thoughts on co-operative marketing should be this: to consider the first step of selling direct from the farm co-operatively through a sales organization, and try to forget marketing to the householder in individual small lots, that the householder consumes. I do not think it is the function of any farmer to produce milk and cheese and all his products of the farm and lay them down on the backdoor steps of the citizens, and it is not the function of the vegetable grower any more than that of other growers to do that. If you started and produced highly specialized marketing machinery, the cost would be a good deal cheaper than at the present time.

The custom of the outlying growers of Toronto bringing their produce in either to the householder or to the stores along Roncesvalles or Queen, is a poor system of marketing. That is happening all over the province because you have prevented a marketing system from growing up, and in my estimation the solution lies possibly in the direction of the consumer with his sales organization, in a market, the bulk of the tonnage tied up around the producing centres, tied up to a producers organization for the purpose of sales, direct sales to the trade. There are commission produce houses handling your produce now, and as a matter of fact, the larger proportion of vegetables grown in this province is sold to the trade. It is this small percentage which affects so injuriously the price. If the bulk of the products were tied up, going through a regular specialized channel of trade, therein I think lies the solution of the marketing problem of the vegetable growers, forgetting the marketing directly to the consumer which is an expensive system of marketing.

With reference to coming to a system of co-operative marketing: Up to the present time the questions of production have been paramount for a certain very good reason. In the future growers of specialized crops will put into practice co-operative marketing, and I think it is essential for you, if you are to keep up to date, to put into effect some better system, for the importance of the crop that you grow for the consumer of this country furnishes enough to give your whole thought to. And in future years, when your boy and my boy are perhaps farming in this province, the great bulk of farm products will leave the farm through salesmanship of the co-operative management of the producers.

Ontario Department of Agriculture

# Fifty-Third Annual Report

OF THE

# ENTOMOLOGICAL SOCIETY

OF

# ONTARIO

# 1922

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

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1923

# CONTENTS


| | Page |
|---|---|
| Officers for 1922-23 | 4 |
| Financial Statement | 4 |
| Annual Meeting | 5 |
| Report of the Council | 5 |
| Report of the Maritime Branch | 6 |
| Report of the Montreal Branch | 7 |
| Report of the Toronto Branch | 8 |
| Report of the British Columbia Branch | 8 |
| Report of the Entomological Society of British Columbia | 9 |
| Report on Insects of the year, Division No. 3: A. Cosens | 10 |
| Distribution of the European Corn Borer in Ontario during the Summer of 1922: L. S. McLaine | 10 |
| Ploughing as a Factor in the Control of the European Corn Borer in Ontario: H. G. Crawford | 13 |
| Further Notes on the Life History of the European Corn Borer in Ontario: G. Spencer | 18 |
| Discussion | 25 |
| Economic Importance of Insects as Food for the Common Whitefish: W. A. Clemens | 26 |
| Provancher, The Canadian Linnaeus—His Life and Works: G. Maheux | 28 |
| Relation of the Biological and Taxonomic Studies in *Syrphidae:* C. H. Curran | 30 |
| Insects of the Season in Ontario: L. Caesar and W. A. Ross | 33 |
| Notes on *Frankliniella tritici* Fitch: R. C. Treherne | 39 |
| Notes on the Biology of Two Buprestids infesting Blackberry and Hazel: C. G. Hutchings | 43 |
| Insects of the Season in Quebec in 1922: G. Maheux | 46 |
| The Feather Mite—A New Pest of Poultry: L. Caesar | 47 |
| The Grape Leaf-Hopper: W. A. Ross and W. Robinson | 48 |
| Mechanical Devices as Aids in the Control of the Strawberry Root Weevil: W. Downes | 61 |
| Recent Work on the Rose Chafer in Ontario: W. A. Ross and J. A. Hall | 64 |
| Oviposition of *Hypera punctata:* H. F. Hudson and A. A. Wood | 70 |
| The Sunflower Maggot (*Straussia longipennis* Wied.): J. E. Brink | 72 |
| Notes on the Seed Potato Maggot (*Hylemyia trichodactyla* Rond.): G. H. Hammond | 74 |
| The Entomological Record, 1922: N. Criddle and C. H. Curran | 76 |
| Index | 91 |

To His Honour Henry Cockshutt, Esq.,
*Lieutenant-Governor of the Province of Ontario.*

May it Please Your Honour:

I have the honour to present herewith for your consideration the Report of the Entomological Society for 1922.

Respectfully submitted,

Manning W. Doherty,
*Minister of Agriculture.*

Toronto, 1923.

# Entomological Society of Ontario

## OFFICERS FOR 1922-23

*President*—Mr. F. J. A. Morris, M.A., Peterborough.

*Vice-President*—Dr. J. M. Swaine, Entomological Branch, Ottawa.

*Secretary-Treasurer*—Prof. A. W. Baker, B.S.A., O. A. College, Guelph.

*Curator and Librarian*—Mr. J. A. Flock, O. A. College, Guelph.

*Directors*—Division No. 1, Dr. J. M. Swaine, Entomological Branch, Dept. of Agriculture, Ottawa; Division No. 2, Mr. C. E. Grant, Orillia; Division No. 3, Dr. A. Cosens, Toronto; Division No. 4, Mr. F. J. A. Morris, Peterborough; Division No. 5, Dr. J. D. Detwiler, Western University, London; Division No. 6, Mr. J. F. Hudson, Strathroy; Division No. 7, Mr. W. A. Ross, Vineland Station.

*Directors* (ex-Presidents of the Society)—Rev. Prof. C. J. S. Bethune, M.A., D.C.L., F.R.S.C., Toronto; Prof. John Dearness, Vice-Principal, Normal School, London; Prof. Wm. Lochhead, B.A., M.S., Macdonald College, Que.; John D. Evans, C.E., Trenton; Prof. E. M. Walker, B.A., M.B., F.R.C.S., University of Toronto; Mr. Albert F. Winn, Westmount, Que.; Prof. Lawson Caesar, M.A., B.S.A., O. A. College, Guelph; Arthur Gibson, F.E.S., F.E.S.A., F.R.S.C., Dominion Entomologist, Ottawa.

*Editor of "The Canadian Entomologist"*—Dr. J. McDunnough, Entomological Branch, Ottawa.

*Delegate to the Royal Society of Canada*—The President.

## FINANCIAL STATEMENT

For the Year Ending October 31st, 1922.

*Receipts.*

| | |
|---|---|
| Cash on hand, 1921 | $55 25 |
| Subscriptions | 442 25 |
| Members' Dues | 82 50 |
| Advertisements | 54 65 |
| Back Numbers | 57 31 |
| Bank Interest | 45 |
| Exchange | 15 |
| Cuts | 11 91 |
| Contributions | 187 15 |
| Life Members | 175 15 |
| Government Grant | 1,000 00 |
| | $2,066 77 |

*Expenditures.*

| | |
|---|---|
| Printing | $1,284 28 |
| Expense | 65 37 |
| Cuts | 66 97 |
| Salaries (arrears) | 200 00 |
| Annual Report | 25 00 |
| Insurance | 36 00 |
| Exchange | 4 76 |
| Balance Cash on Hand | 384 39 |
| | $2,066 77 |

*Accounts Receivable.*

| | |
|---|---|
| Advertising | $338 17 |
| Back Numbers | 8 10 |
| Cash on Hand | 384 39 |
| | $730 66 |
| By Accounts Receivable | $730 66 |
| To Accounts Payable | 560 00 |
| Net Balance | $170 66 |

*Accounts Payable.*

| | |
|---|---|
| Printing | $460 00 |
| Salary | 100 00 |
| | $560 00 |

*Auditors* { J. A. Flock. / L. Caesar.

Respectfully submitted,
A. W. Baker,
*Secretary-Treasurer.*

# Entomological Society of Ontario

## ANNUAL MEETING

The Fifty-ninth Annual Meeting of the Entomological Society of Ontario was held at the Ontario Agricultural College, Guelph, on Friday and Saturday, November 24th and 25th.

The general meetings of the society were held in the lecture room of the Department of Entomology. On Friday evening a dinner was held in the College cafeteria, after which the members and visitors adjourned to the Common Room of Mills Hall for a smoker and social evening, when the President, Mr. Morris, read an interesting paper on a collecting trip to Rondeau Park and Point Pelee.

Among the members present were: Mr. N. K. Bigelow, Toronto, Ont.; Messrs. A. Gibson, L. S. McLaine, R. C. Treherne, H. G. Crawford, C. Hutchings, Dominion Entomological Branch, Ottawa, Ont.; Profs. L. Caesar, A. W. Baker and Mr. G. J. Spencer, Ontario Agricultural College, Guelph, Ont.; Mr. F. J. A. Morris, Peterborough, Ont.; Mr. W. E. Biggar, Hamilton, Ont.; Mr. J. A. Hall, Guelph, Ont.; Father Leopold, La Trappe, Que.; and the following officers of the Dominion Entomological Branch: Messrs. W. A. Ross, Vineland Station, Ont.; H. F. Hudson, Strathroy, Ont.

The officers of the society were re-elected save that Mr. J. A. Flock was elected curator in place of Mr. Spencer.

## REPORT OF THE COUNCIL

The Council of the Entomological Society of Ontario begs to present its report for the year 1921-1922.

The Fifty-eighth Annual Meeting of the Entomological Society of Ontario was held at the University of Toronto during the week of December the twenty-eighth. The meeting was held at this time in order that our members might have an opportunity of meeting with the members of the Entomological Society of America and of the American Association of Economic Entomologists.

Many members of the society were present from the various provinces of the Dominion and from the United States. The meetings were also well attended by members of the Entomological Society of America, the American Association of Economic Entomologists and others.

On Wednesday afternoon a meeting was held with the Entomological Society of America in Room 10, Medical Building. The following papers were contributed by members of the two societies:

"Algonquin Days," F. J. A. Morris, Peterborough, Ontario; "Hatching in Three Species of Neuroptera," Roger C. Smith, Kansas State Agricultural College; "Ecdysis in Tmetocera Ocellana," S. W. Frost, Arendtsville, Pa; "Cocoon Spinning by Species of Bucculatrix," O. A. Johannsen, Cornell University; "The Ventral Pro-thoracic Gland of the Red-humped Apple Caterpillar (*Schizura Concinna*)" J. D. Detwiler, Western University; "Observations on a New Species of Chrysops from Central New York," Raymond C. Shannon, Cornell University; "Are there Two Species of the Oyster Shell Scale?" Grace H. Griswold, Cornell University; "A Classification of the Larvae of Tenthredinoidea," H. Yuasa, University of Illinois; "The Phylogeny of the Gall Mites and a New

Classification of the Suborder Prostigmata of the Order Acrina," H. E. Ewing, United States National Museum; "The Syrphid Genera Hammerschmidtia and Brachyopa in Canada," C. Howard Curran, Orillia, Ontario; "Taxonomic Results From a Study of the Genitalia of Male Syrphidæ," C. L. Metcalf, University of Illinois; "Report of the Lepidoptera of the Cornell Expedition of 1919-1920," Wm. T. M. Forbes, Cornell University; "An Extreme Case of Delayed Fall Emergence of Hessian Fly (*Phytophaga destructor*)," W. H. Larrimer, United States Bureau of Entomology; "Importance of Insects in the Food of the Brook Trout," W. A. Clemens, University of Toronto; "The effects of Vitamines on the Growth of Ephestia Kuehniella in Wheat Flour," Charles H. Richardson, United States Bureau of Entomology.

On Friday afternoon the society met with the American Association of Economic Entomologists when the following programme was delivered:

"One Year of the Crop Protection Institute," W. C. O'Kane, Durham, N. H.; "Poisoned Molasses for the Destruction of Noctuid Moths," E. C. Strickland, Ottawa, Canada; "The Western Wheat Stem Sawfly in Canada," Norman Criddle, Treesbank, Manitoba; "Progress in Hessian Fly Control," H. A. Gossard, Wooster, Ohio, and T. H. Parks, Columbus, Ohio; "European Corn Borer—Life History in Ontario," H. G. Crawford, Ottawa, Canada; "European Corn Borer—Present Distribution in Ontario," L. S. McLaine, Ottawa, Canada; "European Corn Borer; Control Under Ontario Conditions," G. J. Spencer, Guelph, Ontario; "The Corn Borer Problem in New York State," E. P. Felt, Albany, N.Y.; "Chemotropism of Chinch Bug," H. Yuasa, Urbana, Ill; "Observations on Insects Attacking Sorghums," Wm. P. Hayes, Manhattan, Kansas; "The Onion Maggot in British Columbia Under Irrigated Conditions," R. C. Treherne, Ottawa; "The Cabbage Root Maggot," L. Caesar, Guelph, Canada; "A Forest Insect Survey From the Air," J. M. Swaine, Ottawa, Canada; "Forest Sample Plot Studies in a Spruce Budworm Outbreak," F. C. Craighead, Ottawa, Canada; "The Life History, Habits and Injuries of the Maple Case-bearer," Glenn W. Herrick, Ithaca, N.Y.

On Friday evening, an Entomologists' Dinner was held at the Prince George Hotel under the auspices of the American Association of Economic Entomologists. Many members of our society accepted the kind invitation of this society to be present.

*The Canadian Entomologist*, the official organ of the society completed its fifty-third volume in December last. The volume contained 342 pages, illustrated by seventeen full page plates and nineteen original figures. The contributors to these pages numbered fifty-three and included writers in Ontario, British Columbia, Alberta, New Brunswick, sixteen of the United States, South Africa and New Zealand. Six papers were published during the year on popular and practical entomology.

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## REPORT OF THE MARITIME BRANCH

The Eighth Annual Meeting of the Acadian Entomological Society was held in Amherst, N.S., on Thursday, December 14th, 1922. In the absence of the President, the Vice-President, Dr. Brittain, occupied the chair. A short business meeting was held and last year's officers were all re-elected as follows:

*Honorary President*.....Dr. A. H. McKay, Halifax, N.S.
*President*.....Mr. Wm. McIntosh, St. John, N.B.
*Vice-President*.....Dr. W. H. Brittain, Truro, N.S.
*Secretary-Treasurer*.....Mr. A. B. Baird, Fredericton, N.B.
*Assistant Secretary*.....Mr. W. E. Whitehead, Truro, N.S.
*Member of Council*.....Dr. Edna Mosher, Kempt Shore, N.S.

The remainder of the day was devoted to the discussion of entomological problems and the reading of the following papers:

Some Notes on Entomophthora sphaerosperma, a Fungal Parasite of the Apple Sucker—A. G. Dustan, Entomological Laboratory, Fredericton, N.B.
Some Notes on the Natural Control of the Pine Bark Aphid in New Brunswick—A. H. McAndrews, Entomological Laboratory, Fredericton, N.B.
Insect Pests of the Year in Nova Scotia—Prof. W. H. Brittain, College of Agriculture, Truro, N.S.
Insect Pests of the Year in New Brunswick—R. P. Gorham, Entomological Laboratory, Fredericton, N.B.
The Results of Further Experiments on the Control of the Cabbage Maggot—Prof. W. H. Brittain, Truro, N.S.
Sulphur Dust as an Insecticide—A. Kelsall, Entomological Laboratory, Annapolis, N.S.
Some General Results of Natural Control Studies in Canada, Applying Particularly to the Spruce Budworm, Forest Tent Caterpillar and Larch Sawfly—Dr. J. D. Tothill, Entomological Laboratory, Fredericton, N.B.
The Use of Aluminium Sulphate in Place of Copper Sulphate in Insecticide-Fungicide Combinations—A. Kelsall, Annapolis, N.S.
Some Notes on the Larch Sawfly and Larch Case Bearer and Their Natural Control in New Brunswick—A. B. Baird, Entomological Laboratory, Fredericton, N.B.

Since our last report was presented we have published the seventh number of our "Proceedings" which comprises some 88 pages and includes all the papers presented at our last annual meeting. An informal field meeting of the Society was held at Wolfville, N.S., on Friday, August 11th. Our membership remains about the same from year to year, twenty-four paid-up members being now on our list.

A. B. Baird, *Secretary-Treasurer.*

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## REPORT OF THE MONTREAL BRANCH

The Forty-ninth Annual Meeting was held on May 13th, 1922, in the Lyman Entomological Room, Redpath Museum, McGill University.

Eight meetings were held during the season with an average attendance of nine.

The following papers and talks were given:

The Brighter Side of Entomology.....A. F. Winn.
Phoebe Bird Catching a Green Veined White.....J. W. Buckle.
Early Appearance of Some of Our Common Butterflies.....J. W. Buckle.
Common Yellow Butterfly.....A. F. Winn.
Protective Colouring.....A. F. Winn.
The Hemipterous Genus, "Deræocoris".....Geo. A. Moore.
Albinism in the Female of C. Philodice.....A. F. Winn.
Hemiptera-Homoptera Taken at Peaks Is., Me., 1921.....Geo. A. Moore.
Notes on the Gypsy Moth at Portland, Me.....A. F. Winn.
Report of the Seventy-fourth Meeting of the American Association for the Advancement of Science.....Dr. Corcoran.
Erora Laeta Edwards.....A. F. Winn.
"The Edge of the Jungle," by Beebe.....Geo. A. Moore.
The White Border of Euvanessa Antiopa L.....A. F. Winn.
The Cicadellidae Taken at Peaks Is., Me., 1918-1920.....Geo. A. Moore.
Some Notes on Silkworm Larvae.....T. C. Baines.

The Treasurer reported a balance on hand of $165.27.

The following were elected officers:

*President*.....A. F. Winn.
*Vice-President*.....G. Chagnon.
*Secretary-Treasurer*.....Geo. A. Moore.
*Librarian*.....J. W. Buckle.
*Council*.....Dr. Corcoran, E. H. Hall, A. C. Sheppard.

Geo. A. Moore, *Secretary.*

## THE ANNUAL REPORT OF THE TORONTO BRANCH FOR 1921-1922

The Twenty-sixth Annual Meeting of the Toronto Branch was held in the Biological Building on October 18, 1922.

The report of the council showed that during the past season eight regular meetings were held at which there was an average attendance of fourteen persons. The following papers and addresses were given:

A Trip to the Rocky Mountains.....Prof. E. M. Walker.
Nipigon.....Dr. W. A. Clemens.
Rambling by the Grand River.....Miss Mary Pettigrew.
Education and Instinct.....Mr. C. W. Nash.
The Free Larval Chamber Gall.....Dr. A. Cosens.
The Wasps of the Nipigon Region.....Mr. S. Logier.
Arctic Butterflies.....Prof. E. M. Walker.
Syrphidae in the Collection of the Royal Ontario Museum.....Mr. N. K. Bigelow.
An Interesting Ant from Muskoka.....Mr. S. Logier.
The Planidium Stage of Parasitic Hymenoptera.....Miss Norma Ford.
New Records in Odonata and Orthoptera from Southern Ontario.....Prof. E. M. Walker.
The Occurrence of the Strawberry Petiole Gall, *Diastrophus fragariae*, on Cultivated Plants.....Dr. A. Cosens.
Insects of the Nipigon Region.....Mr. N. K. Bigelow.

One new member was elected, viz., Mr. E. C. Corfe.

The Treasurer's report showed a balance of $23.96.

For the season of 1922-23 the following officers were elected:

*President*.....Mr. S. Logier.
*Vice-President*.....Dr. E. M. Walker.
*Secretary-Treasurer*.....Mr. A. H. Leim.
*Librarian*.....Miss Norma Ford.
*Council*.....Dr. Cosens, Dr. Clemens, Mr. Bigelow, Mr. Hall.

Norma Ford, *Secretary-Treasurer.*

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## REPORT OF THE BRITISH COLUMBIA BRANCH

The Twenty-first Annual Meeting was held in Victoria on Saturday, January 21, 1922.

The President, L. E. Marmont, was in the chair, and fourteen members were present.

The Secretary's Report and Financial Statement was read by Mr. R. Glendenning, Assistant Secretary, in the absence of Mr. Downes.

The business and discussions upon it occupied nearly the whole of the morning session, the subjects being:

The continuance of the Entomological Record; the Society's Cup, offered for school competition; the by-laws revised for incorporation, and the proposed increase in subscription to the parent society. The following motion was passed relative to the last subject: "That this Society thinks a subscription of $1 to the Ontario Entomological Society is sufficient, in view of the decrease in prices."

The following papers were read:

The Use of Spreaders in Poison Sprays.....A. L. Lovett.
Hemisarcoptes Malus and Its Relation to Oyster Shell Scale.....E. P. Venables.
Economic Insects of the Year in the Lower Fraser Valley.....R. Glendenning.
A Talk on the Chilcotin Country and Its Orthoptera.....E. R. Buckell.
(Illustrated with lantern slides.)
The Teaching of Entomology in the Public Schools.....J. W. Gibson.
Aerial Surveys as an Aid to Entomological Investigation.....E. Hearle.
The Life History of the Poplar Sawfly.....W. Downes.
The European Earwig in British Columbia.....R. C. Treherne.
Incidental Observations Regarding Certain Insects.....W. H. Lyne.

The election of officers resulted as follows:

*Honorary President*.....F. KERMODE.
*President*.....L. E. MARMONT.
*Vice-Presidents*.....{R. S. SHERMAN (Coast). M. H. RUHMANN (Interior).

*Advisory Board*—The above and E. H. BLACKMORE, W. H. ROBERTSON, J. W. GIBSON, W. H. LYNE, E. HEARLE.

*Honorary Secretary-Treasurer*.....R. GLENDENNING, Agassiz, B.C.

A hearty vote of thanks was accorded to Mr. W. Downes, the retiring secretary, for his valuable services.

It was decided that the next meeting would be held in Vancouver.

R. GLENDENNING,
*Secretary-Treasurer.*

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## ENTOMOLOGICAL SOCIETY OF BRITISH COLUMBIA

At the Twenty-second Annual Meeting the President, L. E. Marmont, occupied the chair and fourteen members were present. The report of the Secretary-Treasurer and the Financial Statement were adopted, the latter showing a credit of balance of $73.

The discussion on general business and policy resulted in three motions being carried:

1. To proceed with Incorporation.
2. To hold a summer meeting in the Okanagan this year.
3. To discontinue the offering of a cup or other prizes for school competition for the present.

The election of officers resulted as follows:

*Honorary President*.....F. KERMODE.
*President*.....L. E. MARMONT.
*Vice-Presidents*.....{R. S. SHERMAN. M. H. RUHMANN.
*Honorary Secretary-Treasurer*.....R. GLENDENNING, Agassiz, B.C.
*Honorary Auditor*.....W. S. MOORE, J.P.
*Advisory Board*—The Officers and J. DAVIDSON, W. DOWNES, E. HEARLE, W. H. LYNE, E. P. VENABLES.

The following papers were presented:

Presidential Address.....L. E. MARMONT.
Collecting in Sage Brush of S. Okanagan.....E. R. BUCKELL.
Key to Vespini.....C. B. GARRETT.
Control of Oyster-shell Scale with Oil Sprays.....M. H. RUHMANN.
The Peach Twig Borer in British Columbia.....R. C. TREHERNE.
Economic Entomology in the Dry Belt of British Columbia....E. P. VENABLES.
Notes on Economic Insects in 1922.....W. DOWNES.
New Records of British Columbia Hemiptera.....W. DOWNES.
Effect of Fumigation on Certain Insects.....W. H. LYNE.
The Elm-Currant Aphis—(With lantern slides).....R. GLENDENNING.
Forest Entomology.....R. HOPPING.
Mosquito Control at Banff.....E. HEARLE.
Relation of Botany to Entomology.....W. B. ANDERSON.

Under the microscope were shown slides of Mymaridæ by O. Whittaker.

It was decided to hold next year's meeting at Victoria, B.C.

R. GLENDENNING,
*Hon. Secretary-Treasurer.*

## REPORTS ON INSECTS OF THE YEAR

### Division No. 3 Toronto District—A. Cosens

The relatively low temperature of the past summer must have acted as a check on the insect pests, as some of them were less troublesome than usual. The Aphids were not so plentiful on the roses and spiræas, a very little spraying serving to keep the bushes immune from attack. The Cutworms were much less in evidence, even in the sandy gardens of the northern part of the City, and there also seemed to be a smaller percentage of the fruit on unsprayed trees infected by the codling-moth.

After three years in which the Monarch Butterflies were only rarely seen, they have again been very numerous this summer. They congregated in High Park during the latter part of August, but left that locality early in September.

The introduced Ground Beetle, *Carabus nemoralis*, is becoming so common that anxious inquiries have been made as to whether it is harmful or not. These large, dark-coloured beetles, so often found under leaves and other garden debris are among the most beneficial of our insects. That they are not recognized as such is owing to their habit shared by their larvæ, of hunting at night and remaining in hiding during the day. They are closely related to other of our beetle friends, the blue-winged Caterpillar Hunters, *Calosoma*.

In July my attention was drawn to Lepidopterous larvæ feeding in the flower buds of a cultivated Evening Primrose, *Oenothera biennis*. The buds were swollen, especially in the stalks, and were also much shortened. The adult moths were sent to Mr. A. Busck, Washington, and were kindly identified by him as *Mompha stellella* Busck.

Although the Strawberry Petiole Gall, *Diastrophus fragariae* Beutm. is fairly common here, I have not found it on cultivated plants until this season. The gall consists of an elongated, cylindrical swelling of the petiole. The enlargement, when dry, has a regularly beaded appearance, owing to a constriction occurring between every two larval cells. The gall-bearing leaves die early in the season.

Two other species of the gall-producing genus *Diastrophus* infect both the wild and cultivated species of their hosts. *Diastrophus turgidus* Bass. forms irregular, pithy swellings around the stems of the raspberry, and *Diastrophus cuscutæformis* O.S. deformities on the stems of bramble. The latter gall is made up of a large number of small galls clustered together. Each of these consists of a small, hard spherical mass of tissue surrounded by a rosette of minute filaments.

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## THE DISTRIBUTION OF THE EUROPEAN CORN BORER IN ONTARIO DURING THE SUMMER OF 1922

L. S. McLaine, Division of Foreign Pests Suppression, Department of Agriculture, Ottawa

The results of the scouting work for the European Corn Borer carried on in southern Ontario during the summer of 1922, show that although this insect has spread over quite a large area during this past season, the amount of spread is not quite as large as was the case in 1921. It is to be hoped that the latter year was an unusually favourable one for the European Corn Borer owing to the long dry summer and excessive heat.

The scouting was carried on under the same co-operative scheme which was adopted when this insect was first found in the Province, that is, the work was under the immediate supervision of the Canada Department of Agriculture, but the Ontario Department of Agriculture assisted by delegating four men and two Ford cars for the scouting work. A total of fifteen men and five Ford cars were engaged on the scouting which commenced on July 24th, and was completed September 20th. During this period one hundred and sixty-five townships were carefully examined, and of these forty-five were found to be infested by the European Corn Borer.

This insect has spread during the past year over Kent, Essex and Lambton counties, and the important corn growing area of Ontario may now be said to be infested by this pest. The infestation in the counties mentioned is, fortunately, extremely "light," and up to the present time no actual damage has resulted to the corn crop in these areas, although the same cannot be said for the "heavily" infested districts in Elgin and Middlesex counties. In 1921 a single township (Pickering) was found infested on the north shore of Lake Ontario, but the scouting carried on during the past summer adds nine additional townships to the infested area. The greater portion of these have undoubtedly been infested by the natural dispersion of the insect, but the cause of infestation in two townships (Clarke and Brighton) at least, is unknown. The infestations in these counties were very light and isolated, and may possibly have been due to importing infested corn or corn stalks.

There was very little spread of this insect in a northerly or northeasterly direction, which may be due to the fact that there is comparatively little corn grown in this area. In addition the infestation found in the northern territory in 1921 was very slight.

The area known to be infested by the European Corn Borer up to October 1922 is as follows:

The entire county of Brant, Elgin, Essex, Haldimand, Kent, Lambton, Middlesex, Norfolk, Oxford, Perth, Waterloo, and Welland; and the following townships, Culross in Bruce county, Clarke in Durham county; Trafalgar in Halton county; all but Ashfield, Wawanosh East, Wawanosh West and Howick in Huron county; all but Caistor in Lincoln county; Brighton in Northumberland county; Pickering, Whitby East and Whitby West in Ontario County; Albion, Chinguacousy, and Toronto in Peel county; Guelph in Wellington county; Ancaster, Barton, Flamborough East and Flamborough West in Wentworth county; and York and Scarborough in York county. A total of one hundred and fifty-two townships covering approximately eleven thousand seven hundred and eleven miles is represented by the above area.

The following table indicates the spread of the European Corn Borer in southern Ontario since its discovery in 1920, together with the number of townships and square miles infested up to October, 1922:

| Year | Townships Infested | Square Miles Infested |
|---|---|---|
| 1920 | 35 | 2,780 |
| 1921 | 65 | 4,910 |
| 1922* | 7 | 524 |
| 1922 | 45 | 3,497 |
| | 152 | 11,711 |

*Seven townships were added to the quarantined area in February, 1922, in order to provide markets and straighten the quarantine line.

In February, 1922, the European Corn Borer[1] quarantine was amended. By this amendment a double quarantine was established which prevented the movement of corn on the cob, corn stalks, etc., from the heavily infested areas (Elgin and Middlesex counties), to the lighter infested districts. This was done in order to prevent shipments, heavily infested with European Corn Borer larvæ, being forwarded to newly or very lightly infested areas, and thus to start up new and possibly heavy infestations on the border of the quarantined area. The advisability of taking this step can best be illustrated by the results obtained from the making of field counts to determine the degree of infestation in different districts. Port Stanley was taken as the centre for this work, three circles were drawn with a radius of approximately eight, sixteen and thirty miles. Fields of corn were examined at frequent intervals on these circles. The degree of infestation in the inner circle showed a variation of from ten to one hundred per cent., whereas the variation in the middle circle was from seven to seventy-seven per cent., and in the outer circle from one to seven per cent. The percentages were secured by counting the number of stalks infested in lots of one hundred stalks, three counts were made in each field and the results averaged.

During the summer quarantine on the movement of corn and corn products was maintained in various ways. Warning notices were placed at all road intersections leading out of the quarantined area. Large banners were placed on the main automobile highways, warning motorists not to take corn from the infested area. Inspectors were stationed at Toronto, Hamilton, Sarnia and Windsor to watch for evasions, in the case of shipments of sweet corn on trains, boats, via express and freight, etc. At Hamilton 15,000 dozen and at Toronto 47,000 dozen ears of corn were examined and traced. When it is realized that sweet corn from southern Ontario goes as far east as Cape Breton, N.S., and as far west as the Soo and Port Arthur, the necessity of keeping a close watch on all shipments of corn to prevent the spread of the European Corn Borer can readily be understood. In addition, a close watch was kept on Fall Fairs, as it has been customary in the past to send green corn for fodder with exhibits of live stock. The general public is co-operating with the Department of Agriculture in a very gratifying manner. During the entire season it was only necessary to prosecute six individuals for evading the quarantine by shipping corn on the cob from the quarantined area.

In July, 1921, the United States Department of Agriculture placed a quarantine[2] on the province of Ontario, which prohibited the importation into the United States of certain cut flowers and vegetables unless the same were accompanied by a certificate of inspection, stating that the shipment was free from infestation by the European Corn Borer. Between February 15th and November 11th, 1922, nine hundred and sixty-five certificates were issued. The articles inspected and covered by these certificates included the following:

| | |
|---|---|
| Oats and Rye Straw | 440 tons. |
| Cut Flowers | 2,059 dozen. |
| Beets with tops | 26,850 dozen bunches. |
| Rhubarb | 200 dozen bunches. |
| Beans (green) | 3,060 bushels. |
| Celery | 290 crates. |
| | 100 acres inspected in the field. |
| Spinach | 115 bushels. |
| Miscellaneous Plants | 150. |

[1] Quarantine No. 2, Domestic, (Revised), *Canada Gazette*, Vol. LV., No. 34, February 18th, 1922, page 3440.

[2] Notice of Quarantine No. 41, with Regulations (Revised), United States Department of Agriculture, July 21st, 1921.

In regard to the European Corn Borer infestation in the United States it may be said that, since its discovery in 1917, the insect has spread over a large area, and particularly in Massachusetts has been responsible for a great deal of damage not only to corn but also to other crops. When first discovered in Massachusetts, Vinal[3] reports corn as "the only valuable commercial crop seriously attacked by this pest." He mentions it as also attacking pigweed, barnyard and foxtail grass and dahlia stems. But conditions have changed, and the insect is now doing serious damage to beets, celery, beans, chrysanthemums, etc. In fact the list of host plants in the Massachusetts area is now one hundred and seventy.[4]

The following table illustrates the spread of the European Corn Borer in the United States:[5]

| Year | No. Twp. Inf. | States Infested |
|---|---|---|
| 1918..... | 32 | Massachusetts |
| 1919..... | 122 | Mass., southern New Hampshire, central and western New York, and Pennsylvania (1). |
| 1920..... | 105 | Mass., N.H., and N.Y. |
| 1921..... | 127 | Mass., N.H., N.Y., Penn., Ohio and Michigan. |
| 1922..... | 177 | Mass., N.H., N.Y., Penn., Ohio, Mich., Maine, and Rhode Island |
| Total... | 563 | |

Now that the European Corn Borer has invaded the corn growing sections of Ontario, it is to be hoped that it will continue to confine its activities to corn and not attack other plants to the same extent as it has done in Massachusetts, for up to the present time in Ontario corn has been the only plant seriously injured; but time alone will solve this question.

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## PLOUGHING AS A FACTOR IN THE CONTROL OF THE EUROPEAN CORN BORER IN ONTARIO

H. G. Crawford, Entomological Branch, Dominion Department of Agriculture, Ottawa

During the preliminary investigation of the European Corn Borer it was noted that the larvæ, when buried with infested corn stalks under certain conditions, subsequently came to the surface of the ground. This was inferred in 1921, and clearly demonstrated in 1922. The weakness in the 1921 data was that the larvae emerging from below ground were not recovered.

With this shortcoming in mind, the 1922 studies were carried on with a view to recovering the larvæ as they came to the surface after the corn refuse had been buried or ploughed down.

The technique of the study was simple. It consisted in burying, by hand

[3] S.C. Vinal, The European Corn Borer, Bulletin 178, Massachusetts Agriculture Experiment Station, December, 1917.

[4] E. P. Felt, The European Corn Borer, Extension Bulletin 31, New York State College of Agriculture, Revised March, 1922.

[5] W. N. Keenan, The Distribution of the European Corn Borer in Canada and the United States. Ann. Rept., Que. Soc. Prot. Plants, 1921-22. Also from Quarantine No. 43 of the United States Department of Agriculture (2nd Revision), May 1st, 1922, with amendments to November 16th, 1922.

in single or double layers, infested stalks containing an unknown number of larvæ, at a uniform depth of six inches, in variety of soils; as well as of other series of experiments by ploughing down the undisturbed crop refuse of stubble and stalk in a field from which the crop had been cut and which was known to have been severely infested. This material contained large numbers of larvæ. Traps were placed on the soil surface surrounding the material thus disposed of for the recovery of the caterpillars. About the burials, the traps were arranged to recover larvæ only on the inner side, while on the ploughed areas they were designed to capture the larvæ wandering about the surface on both the inner and the outer sides. These recovery traps were constructed to present to the wandering larvæ a suitable place in which to spin up for the winter, where the larvæ, thus taken, would be easily available for daily examination and removal. A description of this trap will appear in the *Canadian Entomologist* for 1923.

Of the studies carried on between 1920 and 1922, the series of ploughings in the fall of 1922 most directly bear upon and illustrate the conditions to be met with in the field. This paper thus takes the form of a progress report and deals with the autumn activities of the corn borer larvæ ploughed down with the crop refuse left in the field after a severely infested crop had been harvested in the regular manner, that is, to say, with the binder cutting the corn at a height of approximately six inches.

The study was carried on at Dexter, Ontario, upon the eastern edge of the area of most severe infestation in 1921. It consisted of a four acre sand loam field, planted on May 27th, 1922, to smut-nose, white and yellow Flint corn in hills 3′ 6″ square. By the end of the season it had sustained a stalk infestation of 100 per cent. and a farm loss of 40 per cent. The crop was cut early in September and the stalks stooked in the field throughout most of the fall experiments. The larvæ under study were those normally present in the stubble and pieces of broken stalk left by the crop. The ploughing was done with an ordinary single furrow walking plough and skimmer about seven inches deep in strips about fifteen feet wide running north and south, at intervals across the field, of from 35-42 feet. The ploughings began on September 28th and were carried out at weekly intervals till November 9th. The work was done very carefully, and though there was present an average of 18.29 feet of stalk and 20 stubble per 36.75 square feet of surface, the surface of the ground was exceedingly clean. It was with difficulty that 25 feet of refuse for study was found on the surface of 1 10 of an acre. In 1921 a similar field, ploughed between September 19th and 24th and seeded to wheat, had practically all the larvæ leave the material below ground and come to the surface before the freeze-up in November. Hence, in 1922, it was of particular interest to determine the reaction under the later fall conditions.

Seven ploughings were made, one upon each of the respective dates; September 28, October 6, 12, 19, 26, November 2, and November 9, each strip involving the space between a row of stooks.

On top of each ploughed strip a two-way recovery trap 8 feet square was placed, enclosing 64 square feet and supposed to surround nine hills of stubble and the associated refuse. The traps were placed in position immediately after the ploughing and were looked at daily, in the early morning until the nights became frosty, after which time the recording was done later in the day.

The narrowness of the ploughed strip resulted in that the east and west outer sides of the trap were not as favourably situated for recovering larvæ in numbers as the other two sides and hence cannot be used in attempting to determine the direction of migration. The numbers recovered on the inside of

the trap can readily be looked upon as those coming out of the material ploughed down and surrounded by the trap. The observations were made early in the morning and scant opportunity was given for moving from one side of the trap to the other. The numbers recovered by the trap, together with those later recovered from the enclosed refuse from below ground, reasonably approximated the expectation upon an area of this size. Any lateral movement underground would be of little consequence and would equalize itself.

Table I summarizes the weekly recoveries from each entire trap of the series for the period under observation. Table II summarizes the records of the larvae recovered from the inside of the traps and from the material below ground within the area enclosed. The percentages are based upon the assumption that the larvæ recovered from the inside of the trap were those coming up from enclosed stalks and stubble.

TABLE I.—Summary of Larvæ Recovered in Two-way Recovery Traps above a Series of Ploughings in 1922.

| Date of Ploughing | Total Larvæ Recovered in Traps by Weeks. | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Sept. 28 to Oct. 5 | Oct. 6 to Oct. 12 | Oct. 13 to Oct. 19 | Oct. 20 to Oct. 26 | Oct. 27 to Nov. 2 | Nov. 3 to Nov. 9 | Nov. 10 to Nov. 16 | Nov. 17 to Nov. 21 | |
| Sept. 28 | 39 | 19 | 3 | 3 | 1 | 4 | 0 | 2 | 71 |
| Oct. 6 | .. | 23 | 12 | 6 | 7 | 3 | 2 | 2 | 55 |
| Oct. 12 | .. | .. | 49 | 39 | 9 | 24 | 3 | 2 | 126 |
| Oct. 19 | .. | .. | .. | 18 | 17 | 16 | 1 | 4 | 56 |
| Oct. 26 | .. | .. | .. | .. | 4 | 10 | 1 | 3 | 18 |
| Nov. 2 | .. | .. | .. | .. | .. | 2 | 1 | 2 | 5 |
| Nov. 9 | .. | .. | .. | .. | .. | .. | 1 | 4 | 5 |
| | Total larvæ involved | | | | | | | | 336 |

TABLE II.—Summary of Larvæ Recovered *inside* Two-way Recovery Traps above a Series of Ploughings in 1922. The recoveries are from the trap itself and from the material below the ground, examined November 20th, 1922.

| Total Number of Larvæ Recovered Inside Traps. | | | | |
|---|---|---|---|---|
| Above Ground | | Below Ground | | Total Recovered |
| No. | Per cent. | No. | Per cent. | No. |
| 35 | 85.36 | 6 | 14.63 | 41 |
| 27 | 61.36 | 17 | 38.63 | 44 |
| 52 | 67.53 | 25 | 32.46 | 77 |
| 23 | 29.87 | 54 | 70.12 | 77 |
| 11 | 12.5 | 77 | 87.5 | 88 |
| 3 | 10.0 | 27 | 90.0 | 30 |
| 4 | 12.5 | 28 | 87.5 | 32 |

A study of the totals, recovered from inside the traps, indicates a progressive increase of from 41 to 88 larvæ from the ploughings up to October 26, thereafter a marked decrease in totals. This is due, in a large measure at least, to the fluctuating larvæ population and to the amount of refuse in different parts of the field. It need not seriously interfere with the general value of the percentages.

The tables, as a whole, indicate clearly some interesting general correlations. The first and most important is the fact, as shown in Table I, that a large proportion of the larvæ come to the surface when ploughing is done early in the season. Even when ploughed as late as September 28, 85.36 per cent. of the larvæ left the buried material. The later ploughings were markedly less effective in this respect, the operation but a week later causing but 61.36 per cent. to come up. Oddly enough the experiment of October 12, two weeks later, was somewhat more effective than that of October 6, 67.53 per cent. of the larvæ being recovered at the surface. With the four later ploughings the proportion attaining the surface decreased still further, so that for the study started on October 19, 29.87 per cent., from that of October 26, 12.5 per cent., from that of November 2, but 10 per cent., and from November 9, 12.5 per cent. were recovered. The last two studies dealt with relatively small numbers of larvæ, and the value of the figures should be discounted somewhat.

The second important point, as shown in Table I, is that the first week following ploughing is the most important in respect to the numbers of larvæ coming to the surface. This is particularly true in the early season when the soil is warm. As the season advances a progressingly decreasing proportion moves in the first week and the proportion coming up on the second and third week increases. These late moving larvæ in an early fall would be very apt to be retained underground by the rapid cooling of the soil.

The reaction of the larvæ below ground in the spring was studied somewhat sketchily in the same way in 1922. The larvæ were recovered at the surface in traps in fairly large numbers both from material ploughed down in the spring of 1922 and also from a field ploughed late in the fall of 1921.

The general reaction of the larvæ was very similar to that in the fall, though the activity following immediately after turning down was not at all characteristic of the spring conditions. Warm rains on the other hand in early May were followed by very prompt appearance at the surface of relatively large numbers of larvæ.

The larvæ which were below ground all winter came through surprisingly successfully. A characteristic count demonstrated a mortality of 11.1 per cent. in stalks and 26.8 per cent. in stubble below ground, while the material on the surface of the same field suffered comparatively lightly, the death rate in stalks being 5.76 per cent. and that in stubble lying on the surface but 4.65 per cent. The spring studies were not prosecuted with the thoroughness of the fall operations, and it will not be till the summer of 1923 that a detailed knowledge of the reaction at this season will be available.

That the larvæ in Ontario in an essentially one-brooded area actually come to the surface in important proportions when ploughed down in the fall, and that this proportion increases with earliness of ploughing, has been clearly demonstrated. What, however, becomes of these larvæ after being brought to the surface is not at all clear. For the most part they simply disappear, all trace of the bulk of them so far being lost.

The subsequent history of these larvæ is a most important matter and has been given a great deal of study both by the Federal and Provincial investigators, with as yet very little definite result. This study has shown that beetles, ants and even birds in the fall, account for relatively few, as none of these predators are particularly active. The missing larvæ could not be found among the clods of soil on the surface of the ploughed area, they did not again dig into the soil having once come to the surface, nor could they even be demonstrated in the grass about the margins of heavily infested fields after ploughing, either in 1921 or 1922.

A general survey of some other experimental results bearing upon the probable behaviour of the larvæ when moving from a given experimental concentration, indicates that they wander for short distances and establish themselves rather promptly in available suitable material in the immediate vicinity.

Thus in the dead and hollow weeds, both standing and on the ground, about a series of burials in 1921, 155 larvæ were recovered, which had emerged from buried material and were found almost entirely within six feet of the source of supply. In another experiment in which 1,000 larvæ were buried in stalks in the centre of a weed patch in 1922, all the larvæ recovered were within ten feet of the edge of the burial. Where the material in the surroundings made it possible, the larvæ established a sharp density of population gradient. This was well illustrated by a study on a two-foot strip from the margin of this burial at a point where there happened to be a continuous supply of refuse suitable for accommodating borers. Here a count in areas two feet wide and one foot deep, extending westward in a straight line from the edge of the burial for ten feet, gave a count per area of 11, 4, 2, 1, 0, 0, 0, 0, 0, 0, caterpillars.

There is no decided preference evidenced for movement in any given direction, at least as shown by the recoveries in the traps. There was a somewhat greater number taken on the south side when the larvæ within the cage only were considered. However, the total number moving north or south, as indicated by the total count both inside and out, is remarkably evenly divided.

The following table indicates the distribution of the larvæ recovered on the several sides of the traps throughout the season:

Table III.—Summary of the Direction of Travel of the Larvæ Recovered Above a Series of Ploughings in 1922.

| Side of Trap | Inside of Trap | | Outside of Trap | | Total Going in Given Direction | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| North | 33 | 22.2 | 49 | 38.2 | 112 | 51.6 |
| South | 56 | 37.3 | 79 | 61.7 | 105 | 48.3 |
| East | 27 | 18.0 | 17* | .... | 64* | .... |
| West | 34 | 22.6 | 37* | .... | 51* | .... |

*East and West numbers from outside of the trap cannot be used on account of the narrowness of the strips ploughed.

With these general behavior studies in mind it is most surprising that it has not been possible to find any indication of migration from ploughed surfaces to adjacent refuse and stubble-littered, unploughed parts of the same field.

The expected evidence of this migration would be increased larval count in the refuse surrounding the ploughed area, a gradient in density of larval population radiating from the centre of migration and an increment in the number of larvæ found spun up in the leaves associated with refuse about this area. These likewise, in the later season, would be expected to be present in somewhat of a gradient. To date none of these relations of the missing larvæ present in numbers up to the rate of 30,000 per acre have been established in the areas adjacent to ploughings from which the larvæ have disappeared.

A small proportion of the larvæ do find their way into the material left upon the surface of the ploughed ground. These in a given experiment raised the count of this material from an expectation of 0.8 larvæ per foot to 5.92

per foot by the end of the season. But as there was little of this refuse on the surface but a small proportion of the larvæ were thus accounted for. Further, in connection with this experiment in which the ploughing had been done October 12, and the count made November 20, the refuse in the eastern dead furrow was found to have had its average population per foot of stalk and associated leaves raised to but 1.33 larvæ and that of the western dead furrow to 1.107 larvæ, both inexplicably small. This count is more to be wondered at in that practically all larvæ leaving the ploughed land must have passed through the refuse lying in these dead furrows. It is estimated that on this ploughed strip 3,748 larvæ came to the surface. Did they migrate equally east and west there were sufficient to raise the larval content of the refuse in the first 3.5 foot strip of unploughed area by 3.3 larvæ per foot. By actual count of a 12.29 foot section of this strip the population was found to be but one larvæ per foot on the eastern edge and 1.769 per foot on the western edge. A further study in the unploughed areas between the experiments shows no clear indication of any general migration.

Further studies will, of course, be made, using uninfested stalks in the intervals between the ploughings. This was not done in these experiments owing to the large number of larvæ involved and their apparent tendency to enter the first suitable hiding place encountered.

The whole matter of the final resting place of the larvæ is still in the realm of conjecture and the work will have to be repeated, using uninfested cornstalks to finally settle how serious is the danger of wholesale migration of the larvæ to wintering or pupating quarters from land ploughed in spring or fall.

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## FURTHER NOTES ON THE LIFE HISTORY OF THE EUROPEAN CORN BORER IN ONTARIO

G. J. Spencer, O.A.C., Guelph

The winter of 1921 had very little effect upon the larvæ of the European Corn Borer and only between 4 per cent. and 5 per cent. were killed by all causes. However, this was more than in the winter of 1920, when a fraction less than 3 per cent. was killed. In addition to winter killing, the numbers of larvæ in some fields of corn stubble were reduced by woodpeckers which in one field were found to have taken 60 per cent. of the larvæ (H. G. Crawford's notes). The Downey woodpecker is the chief bird concerned in this reduction during the winter, although the Hairy woodpecker may be seen attacking cornstalks in the fall. Birds are too uncertain an element to be depended upon to have any material effect on the numbers of borers in the country.

In spring, as soon as the weather warmed up, it was found that small greyish red ants were taking many borers out of experimental cages. These ants were kindly indentified by Dr. Wheeler of Harvard, as *Lasius niger*, Linn, var. *americanus*, the common garden ant, and we found that they stung any borers they came across and dragged them down their holes. As high as 62 per cent. of borers in their shelters of corrugated paper placed in covered tin cans, were found to have been killed by these ants in a single night, and were being bitten to pieces and hauled out of the can. In the field also, it was found that the ants entered the tunnels in corn stalks and killed and removed the borers. However, when the borers were completely covered up in their silken cases, the ants generally left them alone, although it was found that even these were removed when all the freely exposed larvæ had been taken. In 1921 these same ants had been

observed to be eating the borers in cages, and from one series alone had taken 1,200 borers, but no observations were made at the time on their methods of attack. It is possible that these ants may have some slight effect in springtime, in reducing the numbers of borers in any field where they might occur. The Tachinid fly, *Exorista nigripalpis* Towns, which was found in 1921 to be a parasite on from four to eight per cent. of larvæ in one field, was practically absent in 1922, and a very small and practically negligible number of larvæ were destroyed by it.

It will be seen that we have found very few natural enemies of the borer in Canada so far, and that the attacks of these parasites have very little effect in reducing the number of larvæ. Consequently it was found this spring that there were enough borers in the areas under observation to practically ensure a heavy infestation of the 1922 crop.

## Pupation

Pupation began this year about two days later than last year, but the pupal periods showed certain differences, as tabulated below:

| | 1921 | 1922 |
|---|---|---|
| 1. Length of pupal period, in days: | | |
| Males only, average | 12 | 15.72 |
| Females only, average | 10.19 | 14.63 |
| Both sexes, average | 11.7 | 15.29 |
| 2. Shortest pupal period, either sex | 8 | 11 |
| Longest pupal period, males only | 16 | 21 |
| 3. Season of shortest pupal periods | June 24 to July 14 | July 7 to 12 |
| Average temperature for these periods | 86°-87° F. | 75° F. |
| 4. Relative numbers of each sex.— | | |
| Males only | 56.38% | 51.08% |
| Females only | 43.62% | 48.92% |

## Rates of Pupation under Various Conditions

Experiments conducted over both years, showed that the rates of pupation of the corn borer larvæ varied under different conditions.

1. *Extreme Dryness.* In the autumn of 1921, thirty-nine larvæ were placed in a corrugated roll of paper in which they had spun up, in a dry can with a ventilated lid, and were kept indoors in a dry place all winter. They were examined from time to time all during the summer of 1922. By August 17 twenty-nine had dried up; by September 30, one only showed very slight movement and was very shrivelled. The rest were dead.

2. *Exposed to Outside Conditions.* As opposed to the experiment above, nearly one hundred larvæ were placed in a can with a perforated lid in precisely the same way as above, but the can was left outside on a window sill all winter, exposed to all conditions of weather, By the end of the emergence season in 1922, less than a dozen larvæ had failed to come through as moths and had died.

3. *In Piled Stalks.* In the case of stalks which had been in stooks in the field all winter, as opposed to stalks which had been lying loose on the ground during the same period, it was found that the moths emerged sooner from the loose-lying and damper stalks, than from the former drier material.

4. *Debris Gathered from the Field.* From debris and stubble picked in early spring from a cornfield and heaped in a pile under the shade of an apple tree,

the moths emerged at almost the exact rate at which they emerged from identical material left lying in the field, which was later sown to oats.

General pupation in the field started about June 7th and reached its maximum about June 25th, although the first pupa found occurred on May 31st. Last year the first pupa was found on June 2nd. The daily count in 1922 showed that a high point of pupation was reached on June 16, which was the date on which the first moths were found in the field in 1921. Although pupation was fairly uniform all over the oat field kept under observation, it was found that the emergence of moths from the lowest and dampest areas was considerably delayed. In fact in this low, damp north corner of the field, many borers died after pupating and the moths did not emerge. This was the only instance found where larvæ that had pupated failed to come through to moths unless the pupæ were eaten by ants.

Emergence of Adults. The emergence of adults started this year about June 26 in the oat field and by July 12, 80 per cent. of the moths had emerged from the corn debris and stubble in this field.

| | 1921 | 1922 |
|---|---|---|
| Period of Max. Emergence | June 26–July 1 | July 2–18 |
| Zenith of Emergence | June 28 | July 8–12 |

This later date July 12, 1922, for emergence in the field, coincided with the result obtained from material kept in cages in the open, exposed to the elements.

Oviposition Records. There was a slight difference this year, compared to last, in the number of eggs laid per moth and in the fertility of the eggs. This is summed up by the following figures:

| | 1921 | 1922 |
|---|---|---|
| Pre-oviposition period | 3-9ds. Av. 4 ds. | 1½-8 ds. Av. 3.5 ds. |
| Egg-laying capacity per moth | 95-988. Av. 442. | 37 to 1,210. Av. 642.07. |
| Longevity of females | 10-31 ds. Av. 15.4 ds. | 7-28 ds. Av. 17.07. |
| Fertility of eggs | 100%. | 99%. |
| Mortality of embryos | nil. | About 1% just before time to hatch. |

Habits of Moths. This year's observations confirmed those of last year, when it was found that most moths emerged from the pupæ between 5 a.m. and 9 a.m. In some cases they emerged before 5 a.m., but generally they did not begin to appear above the top of the stalks in the cages until that time. The process of emergence was watched in several cases between 7 and 9 a.m.; it occupied only a few minutes and in less than half-an-hour they were able to fly. Occasionally moths come out later in the day, and but rarely in the afternoons or evenings. One would expect that nocturnal insects such as these are, would emerge at dusk, but such seems not to be the case in this instance.

If the moths are confined in wire cages exposed to wind, they must have water to drink soon after emerging or else they die. We have reared them better on water alone than on sugar solutions. Moths have been kept alive for from two to four days without food in tightly closed cans, but in open cages they must have food or else they die. As soon as they take flight after emergence, they seek cover on the under side of leaves and will remain there all day unless disturbed, or unless the sun should happen to strike them, when they will move into shade.

It was found that in the field they do not begin to move freely until about 9 p.m., although a few will commence to move just after dusk. In cages they would commence to flutter between 8.30 and 9 p.m. every night.

The few records kept in 1922 regarding the flight habits confirmed those of 1921 and nothing new was found out. The moths fly into a slight wind and with a high wind, although they will always try to battle against it at first. When there is no wind, they are liable to soar up above the tops of the tallest trees near-by and may then go in any direction.

When engaged in egg laying at night, the moths hover about three feet above ground, and take no notice of bright light. In 1921, a 300 candle power lantern was used to try and attract them but only a few males were taken, and those arrived at great speed.

Having tried in 1921 to attract moths at night with brilliant lights of several colours, the Strickland liquid poison bait of quassia, arsenic and molasses was tried this season, with exactly the same negative results that attended the light experiments. An effort was made on several occasions to attract male moths to females confined in a trap of the lobster pot type, into which males could enter but from which the females could not escape, but without any success.

During the day both sexes rest in the thickest clumps of corn, and in instances where they occur in oat fields sown on the previous year's corn stubble, they may be found most easily in the tallest, darkest oats. At the maximum period of their emergence, they may be found generally distributed over any field of evenly growing corn except in the first few yards around the edges, where they are seldom found.

Egg-laying. It was found from observations on moths kept in square paper cages in the laboratory, that eggs are laid rather late at night chiefly on the sides of the cases; in a few instances only, were eggs laid before 11 o'clock. Moths oviposit freely on corn or other leaves inserted into the cages, but they seem to lay just as freely on the paper. The number of eggs laid per night was about the same in 1922 as in 1921, in masses of from 1, 3, 8 or 12, to about 60 eggs per mass. In the field the average egg mass contains between 20 to 30 eggs.

As far as our field counts show, moths seem to lay equally freely on flint corn and on dent. The difference that exists between the respective larval infestations per stalk of these varieties, must be attributed to some other factor than preference during oviposition. In the earlier part of the season the finding of eggs coincides with the finding of moths, and the latter occur most commonly on the tallest corn or thickest clumps. In a rolling field, the tops of the knolls are laid on first, even though the corn in the hollows may be nearly twice as tall as that on the knolls. Later in the season, however, eggs may be found equally all over a field. Curious exceptions to this have been found. In one case the eggs were laid in one end of a field first, then in the opposite end and finally in the centre. The larval infestation in September in this field, was greatest in the centre. In another instance eggs occurred first in a field in the side farthest from the source of infestation, and then equally all over. In 1921, in one field, the infestation remained throughout the season on the south side of the field only, close to a wood; the rest of the field was only very slightly infested.

Moths lay at all heights from the ground, from 1½ inches up to 4 feet. However, if tall and short stems occur side by side, they lay on the tall stems first, although they may lay very low down on them. The under side of the crown of leaves is the favorite laying place, though this year (1922) eggs were frequently found on the upper surface of the leaves. These eggs failed to hatch, although in some of them the embryos nearly reached maturity before being killed by the sun.

Habits of Young Larvæ. As stated previously, practically 100 per cent. of all eggs kept under observation during both seasons, hatched. The only instances of complete sterility occurred where males were not introduced into the cages containing females, for periods of six days after the emergence of the females, and though the latter laid freely, none of the eggs hatched.

The emergence of all the young larvæ from any given hatch of eggs, occurs at practically the same time, and usually within 20 minutes all eggs have hatched. The typical action of young larvæ on hatching, is to travel in all directions and to rapidly make for the shelter of rolled up leaves, or to remain quiescent for varying lengths of time on the under side of the leaves on which they were hatched. Observations at intervals of a few minutes, extended over three hours in one case and over two hours in each of three other cases, showed that larvæ for some unknown reason sometimes leave the under side of the leaf where they have taken shelter and will come into the sunlight on top of the leaf.

Soon after being hatched, and during their wanderings over the leaves, many begin to die, some of them just curling up and in a few seconds, dropping off the leaf; others are blown off by the wind and die on the ground; some reach a leaf below and enter the stem at its axil, and others find shelter alongside the mid-rib of the leaf and stay there passively for hours. In three hours after hatching, only nine larvæ out of 39 that were seen to hatch from a mass of eggs, could be found on a corn plant under observation; in six hours after hatching, only four larvæ could be found. This result was obtained proportionately in four cases and only about one-tenth of all larvæ that hatched survived the day and passed into the night. The plants on which these records were made had no tassels. When larvæ hatch in the immediate neighbourhood of young tassels into which they can readily work their way and find shelter soon after hatching, it is probable that a larger majority of them will survive the first 24 hours. This seemed to be the case in two instances where seven and nine larvæ, respectively, all of the same instar, were dissected out of two tassels. First instar larvæ readily eat their way into the individual flowers of a tassel; it is usually not until the third instar that they tunnel into the stem of the tassel and cause it to fall over.

Although the young larvæ find their way into some sort of shelter soon after they hatch and do no feeding on the upper surface of the leaf at this time, they have been seen, even half an hour after emergence, to have eaten very shallow areas out of the under surface of the leaf. The work could not be detected by the naked eye, but required a hand lens to show it up. However, by next morning, they had apparently emerged from the shelters of the day before, to eat small easily seen areas out of the top and under sides of the nearest leaves. In some cases these external feeding areas perforated the leaf like small shot-holes, being done the first night and to a lesser extent the following night, but not afterwards. Many observations showed that this injury is done the first part of the season only, when the corn leaves are young and tender and the corn plant not over three or four feet high; thus later in the season one may find larvæ of early instars established in the tassels and upper stem of tall corn plants, and the only visible injury to the leaves is that which was done in the early part of the season to the lowest leaves. Poisoned spray or dust applied at this time may help to control many of the early borers, especially on sweet corn plots. Occasionally larvæ of instars later than the second, may be found apparently basking in the sun on the surface of leaves or on grass outside burrows. This unusual habit of otherwise nocturnal insects, seems to be the only loophole in their behaviour which leaves them open to attack by our common diurnal

hymenopterous or dipterous parasites. It also leaves them exposed to predaceous insects such as Chrysopid larvæ and adults of the pink, 12-spotted ladybird beetle (*Megilla maculata*). The squeezing of a stem or breaking of it at the point where a borer is working, will cause the latter to hurriedly crawl out and to lower itself down by a silken thread. The action of wind may sometimes do this.

Except on the occasions mentioned, borers remain feeding in the stems they originally entered, until they reach the fifth and sometimes the sixth instar, and then they develop a sort of wanderlust which causes them to leave the stems where they have been feeding, and to migrate to near-by hills of corn or to weeds growing among or alongside the corn. Inspection by night of badly infested corn at the fifth or early sixth instar periods of the larvæ, reveals many of them wandering around. By this migration, and subsequent eating of new holes in cornstalks, the damage in a field is materially increased towards harvest time. The new entrance holes are generally low down and frequently occur among the adventitious or prop roots; from this position, the borers often work down in late autumn right into the tap roots, especially in the case of flint corn.

By the end of July, or at any rate by the middle of August, by which time the borers are full grown, this migration ceases, as was proved several times in experiments by placing absolutely untouched hills of corn alongside heavily infested hills, and then cutting up both series at various times to determine the lateness of migration. Each test was guarded by recovery traps and tanglefoot barriers. Just how far these migrating larvæ will wander was not determined, but it is probably not beyond the range of the nearest corn plants.

This migration, which ceases by the middle of August, of mature or nearly mature larvæ, cannot account for the fact that the larval population of a field diminishes more and more the later the season advances. For instance: In 1922, in a small patch of sweet corn of some 1,000 stalks, sown May 13th, there was by the end of July a carefully estimated and re-checked average infestation of 4.6 larvæ per stalk throughout the plot. By the middle of August, two weeks later, this infestation had dropped to a fraction over three larvæ per stalk through the plot, and had not increased in corn growing near-by nor in the few weeds among the corn. By the middle of September the infestation was reduced to just two larvæ per stalk.

This same peculiarity was noted in 1921 in flint corn, which at time of cutting and stooking contained approximately four larvæ per stalk, but only just over one larvæ per stalk in one month's time. Also in stalks that were stooked outside the laboratory in the first week of October, 1921, the larval population was greatly reduced when counts were made in spring, 1922, and no trace of the larvæ could be found in grass or weed stems or pieces of stalk around the pile.

A secondary movement of larvæ is noticeable under certain conditions of stooking and storing cornstalks. Thus borers will leave the inner stalks of a stook within a week of the stooking and will migrate to the outer stalks. The rapidity of this movement depends upon the dryness of the stalks and upon the closeness of piling; the drier the stalks the less the migration, and the closer the stalks are piled the more rapid the migration. Also in thoroughly dry stalks piled in a mow in a barn the larvæ will remain in their burrows without migration. This was the case in one instance even where the stalks were covered later by a layer of hay. Such larvæ in very dry material have been found to pupate very slowly throughout the season, and to emerge as moths as late as the first week in September.

In closely piled corn that is left outside all winter, whether it is stooked tightly or shredded and then piled closely, the larvæ leave the dense damp centre of the mass and will be found entirely in the outer six to eight inches of the pile.

Varietal Infestation of Corn. As far as we have determined at present, there does not seem to be any variety more subject than another to the deposition of eggs by Corn Borer moths. During the egg-laying season, comparative counts were kept on various plots of flint, dent and sweet corn and the larval population of these plots was determined at time of harvest. It was found that the results were somewhat contradictory, but on the average in the first part of oviposition period the sweet corn was free from eggs while the taller flint and dent varieties were freely laid on. By harvest time, the sweet corn was generally more heavily infested than the other varieties. In some cases, however, the flint corn did have more eggs on it than the dent and the larval population was higher. But on an average through the season eggs were laid equally on all varieties.

Artificial Infestation of Plants other than Corn. The following plants other than corn, were used in garden plots to see if moths would oviposit on them under natural conditions and if larvæ could mature in them. These plants were grown right amongst the corn plots, under identical conditions.

Plants used: Zinnia, snap dragon, salvia, mignonette, gladiolus, potato, tomato, cosmos, bachelor's button, barnyard grass, green fox-tail, yellow fox-tail, pigweed, ragweed, lambs quarters. Also two other plants with thick soft stems, commonly grown in gardens, whose names were not recorded.

On none of these plants did moths lay eggs and to none of them did larvæ migrate from infested corn alongside. Therefore they were all covered with wire cages in which moths were liberated in numbers from three pairs (male and female) to 16 pairs at a time. With the exception of cosmos, tomato and tobacco, the caged moths laid eggs freely on all plants, especially on the snap-dragon, pigweed, lambs quarters, dahlia and the grasses, and the larvæ flourished and reached maturity, although most of them died in the first instance, as on corn.

This failure on the part of larvæ to arrive at maturity, was especially noticeable on weeds such as pigweed (an apparently ideal host as far as softness and thickness of stem is concerned) and lambs quarters, where out of a total of 224 eggs on one large plant of pigweed five larvæ reached maturity and out of 744 eggs laid on one plant of lambs quarters no larvæ reached maturity. The cosmos became infested by larvæ which hatched from eggs laid on the sides of the cage, but the potato, tobacco and tomato plants were untouched to the end.

Field Infestations of Plants other than Corn. Of plants growing among corn or immediately contiguous to cornfields, the following were found at different times in 1921 and 1922, to be infested by corn borer larvæ: White sweet clover (only one very slight infestation) golden rod, mullein, Canada thistle, wild sunflower, blueweed, wild raspberry, burdock, yarrow, ground cherry, lady's thumb, pigweed (favorite host) ragweed and tumbling pigweed. The borer was also found in apples on the ground and tomato fruit. It is practically certain that all the above infestations were from migrating larvæ only, never by larvæ from direct oviposition. It was never found in tomato, tobacco or potato stems, in red clover, beans, pumpkins and garden sunflowers, although these were grown right amongst infested corn.

In 1922, a heavy infestation was found in oats growing in a field which had contained very heavily infested corn in 1921. This oat infestation was suspected in 1921 as being probable but it was not confirmed until this year, when it was

found that larvæ of all instars up to the fifth, were abundant in the oats, feeding right inside the stems or between the stems and the leaf sheaths, so as to rob the oat heads of proper nourishment and to kill and bleach them. The estimated loss of grain from these bleached and unfilled heads (in this one field only) amounted to half bushel per acre. At the time of oat harvest, no larvæ were over the fifth instar, and when the oats were cut all larvæ died within two days after cutting. In some cases it was found that the more mature larvæ had left the cut oat stems and had attempted to enter weed stems in the field, but even these all perished within three days. Thus what threatened at first to be a serious situation ultimately amounted to nothing. Within 300 yards of this oat field which was so heavily infested, was a large early-planted field of dent corn which was lightly infested, at harvest, even for dent. Thus the infestation of oats promises to be a fortunate occurrence as far as corn is concerned, because if moths will oviposit freely on oats, they will be content to remain there and neighboring cornfields will escape what would otherwise be an added infestation.

Also in 1922, a slight infestation was found on sugar mangels growing alongside a fairly heavily infested cornfield. With the exception of three caterpillars found in one mangel, which all circumstances pointed to having been hatched from eggs laid on that mangel—all the larvæ found in this field had migrated from the corn alongside. The total damage to the mangels was negligible. Experiments conducted all through September, of trying to establish mature borers on large mangels, amounted to nothing, although as many as 40 larvæ were caged over a single tuber. The borers did not seem sufficiently attracted to induce them to make more than temporary tunnels in the leaves, which they vacated shortly afterwards.

In reply to a vote of thanks moved by Mr. Gibson and Prof. Caesar, and carried, the following was said:

Mr. Crawford: The expression of appreciation of the work and results obtained in the Corn Borer investigations were most encouraging to all those directly engaged in the work. That for myself, I am glad of this opportunity to publicly thank the Federal Ministry of Agriculture and Dr. Grisdale, Deputy Minister of Agriculture, for their support of the work, Mr. Gibson, Dominion Entomologist, Mr. Treherne, Chief, Division Field Crop and Garden Insects, for their never ceasing encouragement, support and directive suggestions, and Mr. L. S. McLaine, Chief Division Foreign Pests Suppression, for support, suggestion, and loan of assistants. In particular, I wish to mention that in a large measure the quality and quantity of work has been due to the tireless application and effort of my two assistants, Mr. Painter and Mr. Oliver. Further, the professional value of the remarkably close inter-relation between the Federal and Provincial Investigations cannot be too greatly stressed. Nor can the contribution to the study arising out of the constant discussion, comparison of notes and inspiration due to our intimate association, personal and professional, with Prof. Caesar and Mr. Spencer, be too highly evaluated.

Mr. Spencer: I greatly appreciate what Mr. Gibson and Mr. Caesar have said. The work on the borer has been largely inspired by them. Mr. Caesar especially has helped us in every way and at all times; I cannot thank him sufficiently. Mr. Crawford has helped me tremendously—he knows that I appreciate it. Continuous co-operation with him has alone made possible what results we have obtained. I would like to thank my assistants, Mr. Twinn in 1921, and Messrs. Brink and Wishart, this year, for their never-failing loyalty, hard work and keenness, sometimes to all hours of the night. The farmers in the neighbourhood, too, helped us in every way; we all owe them thanks.

# THE ECONOMIC IMPORTANCE OF INSECTS AS FOOD FOR THE COMMON WHITEFISH

Wilbert A. Clemens, Department of Biology,
University of Toronto

During the summer of 1921 a field party from the Ontario Fisheries Research Laboratory of the University of Toronto commenced an intensive study of fishery problems in Lake Nipigon. One phase of the investigations has had to do with the food supply for fish in the lake and the percentages of the various food organisms in the diets of the fish as revealed by the examination of stomach contents. Special attention has been given to the common whitefish, *Coregonus clupeaformis*, as it is the most important of the commercial fishes taken in Lake Nipigon.

The writer desires to express his appreciation of the assistance given by Messrs Dymond, Bigelow, Adamstone, and Harkness, who as members of the party assisted in various ways in the work.

During the first season the stomachs of 209 whitefish were examined. The results show that this fish is almost entirely a bottom feeder and its diet consists chiefly of Chironomid larvæ and pupæ, snails and small clams, Hoy's fresh water shrimp, *Pontoporeia hoyi*, mayfly nymphs, caddis larvæ, corixids, water mites, Ostracods, terrestrial insects and occasionally small fish such as ciscoes, sticklebacks and miller's thumbs. The following examples will illustrate*:

| Whitefish size | Shrimps (*Pontoporeia*) | Caddis larvæ | *Chironomidæ* | | Snails | Miscellaneous |
|---|---|---|---|---|---|---|
| | | | larvæ | pupæ | | |
| 14.0 cm. | .. | .. | 80% | 10 | 6 | 4 |
| 14.5 | 20 | .. | 30 | 5 | 25 | 20 |
| 22.0 | .. | .. | 2 | 85 | .. | 13 |
| 28.0 | 30 | .. | 70 | .. | .. | .. |
| 35.0 | .. | 2 | 3 | .. | 15 | 75 (fish)<br>5 (misc.) |
| 35.0 | .. | .. | .. | .. | .. | 70 (terrestrial insects)<br>30 (misc.) |
| 37.0 | 50 | .. | 40 | .. | 10 | .. |
| 38.0 | 25 | .. | 25 | 3 | 40 | 7 (Mayfly Nymphs, etc.) |
| 40.0 | .. | .. | .. | 3 | 2 | 95 (terrestrial insects) |
| 45.0 | .. | .. | .. | .. | 99 | 1 (terrestrial insects) |

It is evident that the insects form very important items in the food of the whitefish. Calculations for the 209 fish examined show that they constitute 53 per cent. of the food—roughly 50 per cent. Chironomids, particularly the larvæ, are by far the most important of the insects and constitute 35 percent. of the food of the whitefish, while mayfly nymphs form approximately 6 per cent., terrestrial insects 6 per cent. and miscellaneous insects such as caddis larvæ, corixids etc. 3 per cent.

These percentages are particularly significant when the catch of whitefish is considered. In 1919 (the latest available statistics) 1,620,970 lbs. of whitefish were taken from Lake Nipigon. At the wholesale price to the fisherman of 10c per lb., the value of this catch was $162,097. It appears to be a reasonable

*The stomach contents of 65 whitefish are described in detail in a paper now in press, University of Toronto Studies, Publications Ont. Fish. Research Laboratory, by Messrs. Clemens, Dymond, Bigelow, Adamstone and Harkness.

deduction, therefore, that the insects of Lake Nipigon as food for whitefish were worth half this amount, namely $81,000. The Chironomids would contribute $56,000.

If the whitefish in all lakes feed upon insects in like proportions, then we have these figures for the Province of Ontario in 1919:

| | |
|---|---|
| Total catch whitefish | 6,625,304 lbs. |
| Value at 10c. per lb | $662,530.00 |
| Value of the insects as food | $330,000.00 |
| Value of the Chironomids | $230,000.00 |

These calculations appear to be reasonable and are not essentially different from those used by stockmen. Cattle are fed certain feeds in definite ratios and later are sold at a certain amount per pound. The feeds have been worth to the stockman the amount which he obtains from his sale of steers. There is this difference between the two cases, however, in that the food crop for the fish has cost the fisherman absolutely nothing, whereas the food-stuffs, for the cattle have cost the stockman a considerable sum. Some day when aquiculture has advanced along lines similar to those of agriculture the fisherman may pay more attention to his crops of food-stuffs.

Do the results of our investigation of the occurrence of the food animals on the bottom of Lake Nipigon correspond with the results of the examination of the stomach contents of the whitefish? During the summer of 1921, Messrs Adamstone and Harkness operated a small Ekman dredge and obtained bottom samples in various parts of the lake in depths from two to 275 feet.* The area of bottom brought up was 81 square inches, and the animals in this area were sifted out, classified and counted. They found the following average number of animals per square yard, irrespective of depth:

| Chironomidæ | Shrimps *Pontoporeia* | Snails, etc. | Mayflies |
|---|---|---|---|
| 256 | 144 | 128 | 16 |

At this rate there would be for the whole lake in the neighbourhood of 1200 billion Chironomid larvæ, which on the basis of calculations used by Richardson† for the Illinois river, would amount to about 100 million pounds or about 100 pounds per acre of bottom. Further, using the ratio of five pounds of food to one pound of fish as developed by certain European investigators, whose publications the writer has not seen but which are referred to by Richardson (loc. cit.), it is evident that the Chironomids alone occur in numbers sufficient to support a very large fish population.

The bottom inhabiting insects form one of the most important sources of food supply for bottom-feeding fish such as the whitefish. Here is a crop which grows without cost of money, time or labour on the part of man and of which very few people, very few fisherman especially, have any appreciation. In our investigation we are trying to get at all the facts concerning this crop, especially the factors which have to do with its development, and some day we may be able to develop methods for exerting some measure of control. It is apparent from the data already at hand, that the crop should be very carefully protected from destructive industrial wastes and from any smothering materials.

*For complete account see forthcoming report by Messrs. Adamstone and Harkness, in University of Toronto Studies, Publications Ont. Fish Research Laboratory.

†Richardson, Robert E. The Small Bottom and Shore Fauna of the Middle and Lower Illinois River and its connecting Lakes, Chillicothe to Grafton, its Valuation, its Sources of Food Supply and its Relation to the Fishery. Bull. Nat. Hist. Survey Illinois, vol. XIII, article XV.

## PROVANCHER, THE CANADIAN LINNÆUS—HIS LIFE AND WORKS

George Maheux, Provincial Entomologist, Quebec

During the last five years, Canadian naturalists and scientists have heard more about Provancher than during the previous quarter of century; scientific societies, reviews of all kinds and even the daily papers, have in succession paid warm tribute of admiration to the high value of the late Abbé Provancher as a priest, citizen and naturalist.

One day, in August 1918, a large group of friends, admirers and disciples gathered in the Provincial Museum at Quebec. The object of the meeting was the celebration of the 25th anniversay of the death of Provancher, and the unveiling of a tablet presented by the Quebec Society for the Protection of Plants and bearing the following inscription:

A LA MEMOIRE DE
PROVANCHER
NATURALISTE ET ENTOMOLOGISTE
1820-1892.

A few months before, in the church of Cap Rouge, where the remains of Provancher have been piously kept, Canon Huard erected another memorial with the financial aid of the Ontario Entomological Society and numerous other institutions. Nevertheless, all the publicity accorded to the name of Provancher fails to give anything like a complete idea of his career; the entomologist regards him as an entomologist, the botanist as a botanist, while the man was really the Linnæus of Canada; that is to say a true naturalist in the broadest sense of the word, having been interested in and written competently on the various kingdoms of Nature. The complete list of his works reveals a great similitude with Linne's Systema Naturæ, at least, as to the subjects treated and the division into classes, orders, genera and species. The resemblance is much more striking when we come to compare the means of study followed by both naturalists, though separated by more than a century of marked progress in the field of natural sciences. Like Linnæus, Provancher might have said at the end of his life: "Ea quæ fecimus sunt pars minima eorum quæ ignoramus," but we know that his life was well filled, and that his work added substantially to the sum of human knowledge.

Born at Bécancourt, province of Quebec, on March 10th, 1820, Provancher received his education in the newly erected college at Nicolet. There, under the shade of lofty pines, he picked up some flowers which determined his passion for the things of Nature. There, on the dusted shelves of the library he discovered, by chance, an old text-book of botany that helped him greatly in his new studies. These studies were quite private, for until about 1835 the teaching of natural sciences was still in the womb of the future.

At the end of his classical course, in 1840, Provancher decided to become a priest, and he refrained for a while from his scientific ambitions. He occupied various positions in many parishes between 1844-1847. In 1847 he devoted himself to the service of some hundreds of Irish immigrants, stricken down with an epidemic of typhus. His heroism upon this occasion gives an idea of his unselfish character. Though nervous and rather irascible, he concealed under a coarse appearance the heart of a true friend, always frank and generous.

The active scientific life of Provancher began in 1848 with some essays

on grafting that met at first with failure, but that brought back his attention to botany through the channels of horticulture. When transferred, in 1855, to St. Joachim at the foot of Cape Tourmente, Provancher was chiefly interested in botany, and we see from his writings in various papers that he strongly advocated the teaching of natural sciences in all schools. To give a proof of his convictions along these lines, and to help to realize this plan, three years later he published a "Traité élémentaire de Botanique," which was soon adopted by numerous educational institutions.

With this first production Provancher took rank among educators. In 1859 his "Tableau chronologique et synoptique de l'histoire du Canada" was published with the same object in view. While at St. Joachim, Provancher with his devouring activity, commenced experiments on the varietal resistance of fruit trees that can be grown successfully around Quebec. In the newspapers of those days he wrote many articles to convince the farmers of the necessity and advantage of growing fruit trees. His untiring efforts resulted in the planting of a very large area with apple and plum trees, most of which lasted over half a century, the last survivors being killed a few years ago by a severe winter.

Transferred to Portneuf in 1860, Provancher continued his horticultural experiments with great success, even establishing a fruit tree nursery for the advantage of the farmers of this county. Two years later, he was ready to make known the results of his experience as a fruit grower. His new work published in 1882 and entitled: "Le Verger Canadien" has been until lately the classic guide of fruit culture in the province of Quebec. This little book reached its fifth edition in 1885. For the economic entomologist it contains a very interesting section, namely the chapter dealing with the insect pests of the orchards, and describing the means of controlling them. This was, in all probability one of the first expressions of applied entomology ever presented in book form in Canada. But it is not the first in date. Provancher is known almost exclusively as a systematist. Nevertheless, the first paper he published in his life was a discussion on "Insectes et maladies nuisibles au blé," an essay prepared for a competition on this subject organized by the Department of Agriculture for which Provancher received a third prize (under the *nom de plume* of Emilien Dupont).

The first important work of our great naturalist was published in the year 1862. It was the voluminous "Flore Canadienne," the first and only complete work dealing with Canadian plants. Heretofore, no other worker has dared undertake the gigantic task of revising and completing this now old treatise.

Every Canadian and American entomologist knows Provancher as a pioneer entomologist, and it is as such that he merits fame. His systematic classification of insects modestly entitled "Petite Faune Entolomogique du Canada" fills four compact volumes making a total of 2506 pages as follows:

Vol. I.—Coléoptères and additions.
Vol. II.—Orthoptères, Nevroptères, Hymenoptères.
Vol. III.—Hémiptères.
Vol. IV.—Additions and corrections to Hymenoptères.

There may be found the description of all the Canadian species contained in his collections, many hundreds of which were unknown to science. In the order of Hymenoptera alone, Provancher described 923 new species. Rohwer and Gahan, of the Washington Bureau of Entomology have pronounced the accuracy of his descriptions, and pointed out some mistakes in referring species to the wrong genera.

From 1868 until his death in 1892, Provancher devoted much of his time and resources to the maintainence of his review "Le Naturaliste Canadien." The editor filled with his own pen most of the 20 volumes of this publication (nearly 8,000 pages). Apart from insect studies that were later published in book form, this collection contains an elaborate classification of vertebrates, a study on the birds of Quebec, vermes, etc. A volume on Mollusks was published about 1888, and two years later two volumes of travels, one to Jerusalem, the other to the West Indies.

Besides all these occupations Provancher found time to contribute regularly to such weekly papers as "La Minerve" and "La Gazette des Campagnes." These articles discuss a great variety of subjects, especially agricultural and educational. Sometimes he severely criticized public authorities, for instance when the government cut off the annual grant given by previous administrations for sustaining the "Naturaliste Canadien." The life of the publication was seriously menaced three times by such decisions; in 1880, 1883 and again in 1890.

Provancher's activity never knew any limit and left its distinctive mark in many fields. He was known as a very successful organizer, as well in building churches, as in organizing two Canadian pilgrimages to Jerusalem, and promoting a steamship company, etc. In 1888, he started a new publication, "La Semaine Religieuse" a weekly review that is still in existence. During his life he had the pleasure of seeing a large group of learned men interested in natural sciences, many of them being his own disciples, whose studies he directed personally. Such were: Canon Huard, his successor as editor of "Le Naturaliste Canadien," and now curator of the Public Museum, Quebec; Abbé Laflamme, late professor of natural history at Laval University and a geologist of wide reputation; F. X. Bélanger, entomologist, late curator of the Zoological Museum of Laval University; Dr. Crevier, microbiologist; Dr. St. Cyr, geologist, and many others.

When Provancher died at Cap Rouge, March 23rd, 1892, at the age of 72, he could see the realization of the dream of a life time: the natural sciences being then taught in all the colleges and many young men interested in various branches of nature study.

He has been honoured by Laval University with the degree D. Sc.; he was a charter member of the Royal Society, and member of many European and American scientific societies.

His three collections of insects may be found at the College de Lévis and at the Quebec Public Museum. All other specimens collected by Provancher have been kept with care by Rev. Canon Huard, who for the last thirty years has kept alive the memory of the Canadian Linnæus.

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## RELATION OF THE BIOLOGICAL AND TAXONOMIC STUDIES IN SYRPHIDÆ*

C. Howard Curran, Ottawa

With regard to the relationships between the biological and taxonomic aspects of entomology, it is hoped that the question as here dealt with will not be considered in general as laying down any definite policy which must be followed. It is my hope that the subject is treated in such a manner that the suggestions

*Contribution from the Entomological Branch, Department of Agriculture, Ottawa.

offered may be of assistance to some one who has both the time and inclination to investigate and reach more definite conclusions in the problems which are as yet but slightly known. An attempt has been made to limit technical phraseology to the minimum. Certain obvious facts stand out above all others; we have yet to furnish the details and connections.

In discussing the relationships which exist between the immature stages of insects, and the value which their study may be to the taxonomist, it is necessary to first consider in general the prevailing views which are held by prominent entomologists at the present time. It is almost impossible to draw any separating line between the two schools of thought if we consider them as "schools," for the reason that there is complete intergradation. The one extreme holds that the immature stages are an adaptation for the purpose of distributing the various members of the insect world over all the available food plants, and thus guaranteeing against the extermination of plants which might be most desirable as food. Therefore, it is argued, the immature stages, being secondary, cannot indicate relationships of the adults to any great extent. The other view is that the immature stages are a direct indication of relationship. Various modifications of both views exist, and it is very doubtful if any entomologist today holds either extreme as practicable. Rather there is a tendency toward an equal balance between the two, and this would seem to be the obvious basis for all studies pertaining to a stable classification.

So many factors enter into a study of this nature, many of them wholly conjectural, that one must advance with the greatest caution. What may be considered as a definite group of causative factors bearing upon the development of one tribe of insects possessing similar biological habits may not apply or must be greatly modified in another tribe having very similar immature stages yet possessing definite though small differences in the imagines. It has been argued by many, among them some of the foremost students of zoology, that a character, once lost, can never be regained. If such were the case the problems confronting us in the systematic arrangement of insects would be very simple in their solution. We may consider that a character lost through the various environmental conditions will never recur as long as those conditions exist, but the whole scheme of nature is so complex that the very causes which brought about the change are themselves altered because of changes involved. Life in one form reacts upon life in another form, animal life upon vegetable life, vegetable life upon animal life, animal upon animal and vegetable upon vegetable. To exemplify this well-known but always remarkable phase of existence, it is merely necessary to point out that a superabundance of a given species of plant life induces an abundance of enemies, both plant and animal, else the plant species would develop to such an extent that other plants would find life impossible.

In the case of life the prime object is the perpetuation of the species. The result is that environmental influences bear upon insects in such a way that they always react to the slightest changes either in food or temperature. Such changes may or may not be sufficiently marked to cause the fauna or any one member to become specialized to such a degree as to be quite distinct from its ancestors of many generations previous. If certain environmental conditions are more or less local, and do not cover the whole range of a species what is considered a new or distinct species may be developed.

It seems reasonable to suppose that similar environment will, in many cases, develop stimuli along certain lines in more than one species of insect, indeed in insects belonging to moderately or widely separated groups. Where the

outstanding nature of the surroundings is very marked in contrast to the general habitus it is reasonable to believe that the whole fauna inhabiting such a region will develop to a marked degree along similar or parallel lines, although the method of combating strange conditions may not manifest itself in the same way. Still, a similarity must be expected.

I have said that environment is changed by the modifications it produces. All the laws of nature move in cycles and environment is no exception although exactly similar conditions may not recur. Nevertheless they may approach each other closely, and thus cause development along lines similar to those which previously existed, and we may thus find insects receiving very similar stimuli at widely divergent periods and developing much the same characters, although their ancestors may have been distinct, but closely related, species, and those forms resulting from the somewhat similar environment may resemble each other closely. At any rate we should have two distinct series of insects developed along parallel or similar lines, many of which would resemble each other much more closely than did their ancestors, or more closely than they themselves and their ancestors.

It will be seen that it is therefore impossible to devise a lineal classification of insects from either the imagines or immature forms, but at the same time it must be realized that much reliance can be placed upon lineal descent, probably in the majority of cases. This applies especially in what we are pleased to term the families of insects, but becomes more obscure and less reliable as the groups are enlarged, until, when we reach the orders and consider the near relatives of insects we must trust entirely to deduction. I say this notwithstanding our ever increasing knowledge of fossil forms, a complete understanding of which is necessary in order to arrive at definite conclusions. These forms, their relationship to each other and the changes manifest in the various strata in which they are found will eventually lead to a more or less definite understanding of the environmental conditions, and the changes in these conditions which influenced and produced the stimuli causing insect modifications.

It is, I think, an indication of progress when we are able to attain a classification of the adult forms of any family which corresponds as well to the larval classification. It seems that we have reached this condition in the Syrphidæ, and while much still remains to be done, and several discordant factors are apparent, it is a matter of great satisfaction. No group is better adapted for such study nor does any family present such a diverse and yet remarkably consistent group of characters from both the biologic and taxonomic aspect.

Speaking generally, we have now grouped the genera in such a way that all the Aphidophagous (species predaceous upon aphids), all the wood-boring larvæ, (the short-tailed maggots) and all the liquid or semi-liquid feeding larvæ (long-tailed maggots) fall naturally together. There are of course, as must be in the case, exceptions. The remaining groups are varied in their habits. Some species live in the nests of ants and termites, others in the nests of bees. Those in which the larvæ are dwellers in ants' nests form a compact group. In the case of the second group, the adults form a moderately homogenous group, but the larvæ are very diversified in habits: some live in bees' nests, while, so far as is known the majority bore in juicy plants, although it is by no means certain that healthy plants are attacked. I have observed many adults of one of these species (*Volucella fasciata* Macq.) about cactus plants in Kansas and all the plants visited by the females had been previously injured by other insects.

Among the Syrphidæ which contain almost all the aphid eating larvæ I have found it practically impossible to distinguish several of the adults with certainty, but the larvæ are wholly different. In one case (*S. americanus*

*pomus*) the larvæ feed upon aphids which are exposed to the sun, (*Aphis pomi*) and are unique in this respect as Syrphid larvæ rarely are able to survive under such conditions, but must seek the shade of a leaf or stem. The adult is small and dark in colour as compared to the typical form (*S. americanus*). The other form (*S. americanus vinelandii*) has a green larva while that of *americanus* is greyish yellowish. While there are evidently three distinct species, it was considered advisable to consider them merely as varieties. I cite here only the one instance, where such a condition occurs in our Syrphidæ, as an illustration of the problems confronting the student and the need of further study. I might point out that Barnes and McDunnough (Mem. Am. Mus. Nat. Hist., III, Pt. 1, p. 4) have found that they have been unable to definitely satisfy themselves as to the limits of certain species of *Catacola* without referring to the biological peculiarities and distinctions.

I have dealt in more detail, in a paper which will be published within the next few months, with the influence of larval food upon the appearance, habitus and deportment of the adult insect and therefore feel that the subject may be lightly dealt with here. I may say that is very often possible to ascertain by the appearance of an imago, whether the larva is predaceous, parasitic or a scavenger, omitting entirely our knowledge of the habits of the species or genus as conveyed by familiarity with it. Such a thing is possible because the larval habits have influenced the adult to develop along definite lines. With the aphid feeding forms the adult has a compressed, light abdomen, or a long slender one, due to the relative paucity of food, the thorax is large and well supplied with muscles and the head large, the eyes being unusually well developed, apparently in order that the insect may readily discern aphids and deposit their eggs. On the other extreme the forms living in liquid media are robust, the head is relatively smaller, and while they are also excellent hoverers, they have a much stronger wing venation in order to carry their weight. Those living in decaying wood are, generally speaking, intermediate; while predators and parasites all have a quite different shape of abdomen, with the exception of Tachinids, which really are allied to those living in liquid media because of the succulence of the larval host.

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## INSECTS OF THE SEASON IN ONTARIO

L. Caesar and W. A. Ross

### Orchard Insects

Codling Moth (*Carpocapsa pomonella*). In orchards east of Toronto and also around Burlington there was more than the usual amount of loss from sideworm injuries, Kings in some orchards having as high as 50 per cent. of injury and Snows 30 per cent. In Niagara, Norfolk and several other districts the amount of injury of this kind was not nearly so great and was scarcely up to the average.

Fruit-Tree-Leaf-Roller (*Tortrix* [*Cacoecia*] *argysrospila*). There was a considerable diminution in the numbers of this troublesome insect this year compared with the years 1920 and 1921.

Apple Maggot (*Rhagoletis pomonella*). From Burford very badly infested apples were sent in with the statement that some varieties had been almost ruined by this insect. Taking the province however, as a whole our observations tended to show that the apple maggot had not done so much damage as it often does.

Cherry Fruit-Flies (*Rhagoletis cingulata* and *R. fausta*). These insects were not abundant this year.

Bud Moth (*Tmetocera ocellana*). Cigar Case-Bearer (*Coleophora fletcherella*) and Pistol Case-Bearer (*Coleophora malivorella*). In the orchards around Newcastle where these insects were so abundant last year very few could be found this year. This was apparently due to parasitism or else unfavourable weather conditions in the summer of 1921 and not to the effect last of winter, because in the fall of 1921 an examination of the trees showed that there were very few insects of the new generation.

Canker Worms (*Paleacrita vernata* and *Alsophila pometaria*). In several of the districts where canker worm outbreaks occurred last year there was considerable trouble again this year, but on the whole they did much less damage than in 1921. From the number of females of the fall canker worms to be seen this November in some districts it would not be surprising if considerable injury were done next year by this species.

Leaf Hoppers of the Apple (*Empoa rosæ* and *Empoasca mali*). In the orchards around Brighton these hoppers, especially the rose hopper, were exceptionally abundant and almost every leaf on the apple trees was severely blotched and whitened by their work. In the Niagara district the hoppers were also abundant, but in Norfolk where they had been very abundant a few years before there was not nearly so much evidence of their work. In the Niagara district observations indicated that the hoppers had played an important part in the spread of pear blight.

Leaf Bugs or Plant Bugs (*Miridæ*). Almost every year one or more species of leaf bug causes serious loss to fruit, especially to apples in one or more of the fruit districts of the province. Last year a well cared for apple orchard of nine acres at Lucknow had 25 per cent. of the fruit so injured by a species of Red Bug (*Lygidea mendax*) that it had to be graded as domestic or culls. This year, though many of the nymphs could be seen when the blossoms were just bursting, the owner, following instructions on control, harvested a good crop which graded nearly all under number 1 and 2.

The Green Apple Bug (*Lygus communis*) at Newcastle this year was kept under good control both on pears and apples by careful spraying with nicotine sulphate.

In the Niagara district the peach orchards which in 1920 and 1921 had been attacked by *Lygus quercalbæ*, *Lygus caryæ* and *Lygus omnivagus* were not much injured this year. The terms Oak Plant Bug and Hickory Plant Bug are suggested as appropriate names for *Lygus quercalbæ* and *Lygus caryæ* respectively.

Apple Aphids. Aphids this year in some districts did considerable damage to apples, for instance, in one orchard visited, the fruit in the centre and lower parts of Greening trees was all deformed by the rosy aphis. In most districts, however, there was comparatively little damage done to bearing trees by this or the green apple aphis. On young apple trees in the Niagara district the latter species was fairly abundant.

Black Cherry Aphis (*Myzus cerasi*). The stem mothers of this species were more numerous than usual in Niagara; Owing however, to spraying and no doubt to weather conditions also the aphis did not become sufficiently abundant at any time to cause serious loss.

Green Peach Aphis (*Myzus persicæ*). As quite frequently happens in the Niagara district the air on bright warm days the last week in September was full of returned migrants of this species.

Plum Mite (*Paratetranychus pilosus*). This mite was not so abundant as last year. Heavy washing rains apparently did much to hold it in check.

Pear Psylla (*Psylla pyricola*). There were fewer of these insects this year than last and consequently control was easier.

Rose Chafer (*Macrodactylus subspinosus*). These beetles were very common and destructive in many localities.

San Jose Scale (*Aspidiotus perniciosus*). An examination of infested fruit and twigs indicates that parasites of this insect are becoming more numerous. This may help to explain the slow increase of this scale since the severe winter of 1917-18.

The Pear and Cherry Slug (*Eriocampoides limacina*). A young pear orchard at Vineland was partially defoliated by this pest, but generally speaking, the slug was exceedingly scarce. On account of the rarity of the male fly, it is worth mentioning that one was captured at Vineland by Mr. Garlick.

The White-Marked Tussock-moth (*Hemerocampa leucostigma*). This pest was present in several Niagara orchards in sufficient numbers to be noticed, but in no case, which came under our observation, did it cause any serious injury.

The Plum Curculio (*Conotrachelus nenuphar*). This Curculio was not particularly troublesome.

Pear Blister Mite (*Eriophyes pyri*). In the 1919 report we expressed the opinion that this species was coming back into prominence as an orchard pest, but what we looked for at that time has failed to happen. The mite is still of very minor importance.

## Insects Affecting Grapes and Small Fruits

Grape Leaf-Hoppers; Discussed elsewhere in this report.

Rose Chafer (*Macrodactylus subspinosus*). Discussed elsewhere.

Blackberry Leaf Miner (*Metallus bethunei*). This insect was decidedly less abundant and injurious than last year. Parasites were more prevalent than in 1921, but they were hardly sufficiently numerous to account for the very marked decrease in the number of miners.

Blotched mines containing larvæ very similar to the blackberry leaf-miner were noticed in many raspberry patches at Vineland. In no case was the injury serious, but it was conspicuous enough to attract attention. Some larvæ were collected by Mr. Garlick of the Dominion Entomological Laboratory, and adults which could not be distinguished from *M. bethunei* were reared. These flies readily laid eggs on blackberry leaves.

The blackberry leaf miner apparently occurs wherever blackberries are grown in the province. It has been found as far north as Collingwood, and this year it was fairly troublesome at Brighton.

Gooseberry Saw-Fly (*Diphadnus appendiculatus*). This rather uncommon insect was found defoliating red currants and gooseberries in the Vineland district. According to Mr. Garlick this insect when present does more damage than the common currant worm.

Raspberry Saw-Fly (*Monophadnus rubi*). This saw-fly was present in many raspberry patches, but, generally speaking, did not cause much injury. However, in one large patch at Vineland, the canes were almost completely defoliated by it before the owner noticed the injury.

The saw-fly is very easily controlled by spraying with arsenate of lead 1½ lbs. powder, 5 lbs. hydrated lime, 40 gallons of water.

Raspberry Byturus (*Byturus unicolor*). This small pale-brown beetle

was quite plentiful in the spring, and several reports were received, particularly from Jordan, to the effect that it was seriously injuring raspberry blossom buds.

Mr. Garlick found the eggs of this species tucked in between the glandular hairs on the pedicel of the flower and close to the bud or just on it. On hatching the larvæ bore into the receptacle, and as the berries ripen, they are found tunneling in the white hull or feeding on the berry. Infested hulls turn black and soft, the berry becomes soft and is easily shaken off.

Raspberry Leaf-Roller (*Exartema permundanum*). Leaves webbed together by this species were quite commonly found in raspberries and blackberry patches in the Niagara peninsula, particularly at Fenwick. However, in no instance was the injury serious.

Gooseberry Fruit Worm (*Zophodia grossulariae*). It is seldom that one finds any trace of this insect in Ontario, hence it seems worth recording that it was found doing considerable damage to red currants in one locality in Carleton County and was sent in from Russell County with the report that it was injuring gooseberries.

Strawberry Weevil (*Anthonomus signatus*), and the Strawberry Leaf Beetle (*Paria canella*) were again abundant in some strawberry patches in the Niagara district. The latter was very abundant also at Campbellville.

### Insects Affecting Vegetables or Truck Crops

Cabbage Maggot (*Phorbia brassicae*). There was less injury than usual this year from the Cabbage Maggot.

Onion Maggot (*Hylemyia antiqua*). This insect was relatively more abundant and destructive than its close relative, the Cabbage Maggot.

Onion Thrip (*Thrips tabaci*). On the whole there appeared to be less injury from this thrip than last year, as one would expect from a comparison of the amount of moisture in the two seasons.

Striped Cucumber Beetle (*Diabrotica vittata*). The beetles varied greatly in numbers in different parts of the province, and even in different fields in the same part. In Norfolk and Niagara there were several fields of cucumbers severely injured while other fields were scarcely at all attacked, the worst attacked fields being those in which cucumbers had been grown the previous year or those situated close to where they had been grown. A study of the life history and control of the insect has been begun by the senior writers, and will be continued next year. It may be mentioned in passing that so far neither of the writers has found the nicotine dust satisfactory. It stupefies the insects, but almost all recover later.

Melon Aphis (*Aphis gossypi*). This aphis was decidedly injurious to melons and cucumbers at Vineland.

Imported Cabbage Worm (*Pieris rapæ*). This year, as in 1921, these worms were abundant towards the end of the summer, and along with Cabbage Looper did great damage to the leaves of cabbage, cauliflower and in some cases turnips.

Cabbage Looper (*Autographa brassicæ*). As just mentioned this looper was very abundant this fall; in fact, it has been more abundant in 1921 and 1922 than at any time for the last ten or twelve years.

Rhubarb Curculio (*Lixus concavus*). Usually this insect is difficult to find, and does insignificant damage, but this year from several localities it was reported as being so abundant as almost to ruin the crop. One plot near Cayuga was visited and the complaint found to be justified, many of the leaf stalks having from six to twelve feeding or egg-laying punctures. The tissues around

these injuries had in some cases died out and in others become diseased, so that the stalks readily broke with very little strain. Eggs were found in some of the punctures, but as usual no larvæ were present.

Corn Ear Worm (*Heliothis obsoleta*). The almost total disappearance of this insect in 1922, after the remarkable outbreak in 1921, was very interesting. Only about half-a-dozen larvæ in all were seen by the writers this summer. Experiments with larvæ in the fall of 1921 and the great scarcity of the insect this year tend to confirm the theory that the insect does not winter in Ontario, or if so, only to a very slight extent.

European Corn Borer (*Pyrausta nubilalis*). Discussed elsewhere in this report.

Spotted Cutworm (*Agrotis c. nigrum*). This cutworm was much more numerous than usual, and during the latter half of July in several localities, especially in Norfolk, Lambton, Peel and Lennox and Addington counties, there were outbreaks of considerable importance. The newspapers erroneously referred to these as "Army Worm Outbreaks." The outbreaks were not unexpected, because in Norfolk on April 26th the senior writer saw fields in which the early brood of this same cutworm was abundant. At this date some of the larvæ were almost full-grown and others only half-grown, the average being about one inch long.

Potato Insects. The Potato Leaf Hopper (*Empoasca mali*) was perhaps the most important potato pest in Southern Ontario. Flea Beetles (*Epitrix cucumeris*) were very numerous, in some localities almost destroying potato leaves and injuring considerably leaves of tomatoes. The Colorado Potato Beetle (*Leptinotarsa decemlineata*) was not of its usual importance.

## Miscellaneous Insects

Tarnished Plant Bug (*Lygus pratensis*). This pest, although less troublesome than usual on asters, was again injurious to chrysanthemums in some greenhouses.

The most effective method of preventing plant bug injury in greenhouses is to screen the ventilators and doors with wire cloth. This past summer the Dale Estate people at Brampton screened one of their chrysanthemum houses and in reference to the results secured from this the Assistant General Manager wrote under date of October 12th as follows:

"There seems to be little question that the screening of the ventilators has been very beneficial. In the house where this was carried out the tarnished plant bug has been practically eliminated, while in the other houses the bugs have been as bad this year as ever. Further, we have noticed no detrimental effect in the matter of ventilation."

Coiled Rose Worm (*Emphyctus cinciipes*). There was an outbreak of this species in two large greenhouses near Grimsby. In both houses the larvæ were most abundant on the variety Premier. The slugs were easily destroyed by an application of arsenate of lead.

Grasshoppers. In Manitoulin Island there was the most extensive and severe outbreak of grasshoppers which the senior writer has seen in Ontario. The chief species involved was the Roadside Grasshopper (*Camnula pellucida*). Almost every farm throughout the whole length of the island, over 100 miles, was more or less infested. So numerous were the nymphs in the middle of June, when the writer visited the district, that there seemed no doubt that, if not combated, they would totally destroy the grain crop and also much of the hay and pasture.

Manitoulin is unfortunate in having a great deal of very shallow soil, in many fields the rock being only from two to five inches below the surface. As such fields are not cultivated they afforded ideal breeding places for the grasshoppers.

Meetings were held in the worst infested areas, at which the situation was discussed and control measures outlined. These were followed by field demonstrations on the making and applying of the poison bait. The work was then left in charge of local committees and of the agricultural representative.

The formula for the bait recommended was:—

| | |
|---|---|
| Bran | 12 lbs. |
| Sawdust | an equal quantity to 12 lbs. bran. |
| White Arsenic | 1 lb. |
| Salt | 1 to 1½ lbs. |
| Water | about 2½ gals. |

The total amount of arsenic purchased was 29,218 lbs., which gives some idea of the extent or severity of the outbreak.

The result of treatment was that in spite of some of the arsenic being delayed in shipment, a fairly good crop was harvested, and the farmers, from being sceptical of the possibility of combating the grasshoppers, became convinced of the efficiency of the bait and to quote the words of R. E. Cumming, the agricultural representative, "Are all ready to use poison at the first sign of a grasshopper outbreak."

Cicada (*Okanagana canadensis;* det. by Wm. T. Davis). While driving through the woods in Manitoulin Island on June 16th, in connection with the grasshopper outbreak, a loud hissing noise was heard. On investigation this was found to come from numerous Cicadas of the above species. Many of these were on low bushes; others were higher up in the branches of trees, still others were on the trunks, some of them just emerging from their nymphal skins, while others had not yet begun to emerge. The cast skins were much in evidence, some of them six feet or more up on the trunk, but most right at the crown, a few being on the ground a foot or more away from the trunk. Seventy-five of these skins were counted on or close to a single poplar tree, (*Populus tremuloides*). The singing was heard from various woods that day from 11.00 a.m. to 4.30 p.m., though it may have begun earlier and lasted later. In each case the greatest volume of sound appeared to come from the part of the woods where poplars were most abundant. This may be of interest to entomologists, because the species is supposed to have a strong preference for pitch pine.

I regret that I had only one comparatively small cyanide bottle with me, into which I could crowd only a dozen specimens. Had I time and anything to put the Cicadas in, I think it would not have required long to capture one hundred or more; for while many were very shy others could be captured with fair ease by placing the hand quickly over them where they sat.

Chinch Bug (*Blissus leucopterus*). In the third week in July the corn growers in Essex county became alarmed by the migration of what proved to be the Chinch Bug from wheat to corn. On July 21st all stages, or almost all stages, of the insect could be seen on the corn, though the third and fourth instars seemed the most common. Later the infestation became more general, and farmers said there were millions of the bugs to be seen in a single field. That the outbreak was fairly serious there is no doubt, for Mr. Justus Miller in his final report to the writer estimated that the total injury would be about 10 per cent of the corn crop of the county.

This is apparently much the worst outbreak of Chinch Bug in Ontario on

record, and must be attributed to the very favourable climatic conditions, especially during the winter of 1921-22. So far the dry weather of this fall has given almost ideal conditions for the hibernating insects, and should the winter prove mild and fairly dry it will not be surprising if next year will witness much greater injury even than this; though in the past outbreaks have usually lasted only one season in this province.

Instructions for guarding against an attack next year have been sent to the agricultural representative and by him published in the local press.

Ants. There have been more requests for information on how to control ants in houses and lawns this year than at any time in the writer's experience. The most troublesome house species to deal with has been Pharaoh's Ant, (*Monomorium pharaonis*), which is evidently spreading rapidly.

Buffalo Carpet Beetle (*Anthrenus scrophulariæ*). Many requests for information on how to rid buildings from this pest have been received.

Mill and Stored Grain Pests. The mild weather of the last three winters would appear to have something to do with the greatly increased numbers of insects affecting stored grain. The chief species involved are the Indian Meal Worm (*Plodia interpunctella*), the Rice Weevil (*Calandra oryzæ*), and the Saw-toothed Grain Beetle (*Silvanus surmamensis*).

Clover Mite (*Bryobia pratensis*). A correspondent from Melbourne, Ontario, writes of this mite: "This vermin comes out around the foundation of our dwelling house every year about May 1st, and continues to infest the outside and get inside the house by thousands on warm days for a period of three weeks or a month, and then all disappear until the next year. They crawl all up on the pine siding and all over the windows, both upstairs and downstairs."

Hitherto these mites have been sent in in the fall instead of the spring.

Mosquitoes. Tourists in Muskoka and many other parts of the province were unanimous in declaring that mosquitoes were never so numerous or bit so viciously as this year. The claim was made that this year the mosquitoes were much smaller than usual and worked their way into houses through screened windows. The species was not determined, but the writer observed that many specimens were indeed very small.

Heel Fly (*Hypoderma bovis*). There were not so many complaints as usual of cattle being tormented by this fly.

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## NOTES ON FRANKLINIELLA TRITICI (Fitch)

R. C. Treherne, Entomological Branch, Dominion Department of Agriculture

The Order Thysanoptera is rapidly assuming an important place in economic entomology, and many members to-day are recognized as among the most important injurious insects of cultivated crops. In Canada the pear thrips, *Tæniothrips inconsequens* Uzel, the onion thrips, *Thrips tabaci* Lindeman, the greenhouse thrips, *Heliothrips hæmorrhoidalis* Bouche and *femoralis* Reuter, the grass thrips, *Anaphothrips obscurus* Muller, are known and have been recorded in our literature as major pests of the crops they attack. To these we must unquestionably add *Frankliniella tritici* Fitch and its two closely allied species (which may ultimately be classed as "forms" or "subspecies") *occidentalis* Pergande and *californica* Moulton. All three commonly occur in Canada; the last named, thus far, is only recorded from Central and Western Canada, but

doubtless will be found in Ontario and the Maritime Provinces in a suitable environment. Practically all of the injurious species of thrips are contained within the family Thripidæ, and they all appear to have similar feeding habits though the parts of plants they affect may differ. The average length of North American species is about 1 mm., and their mouth parts are suctorial. There is a forward and a backward movement of the head which enables the minute styliform mandibles to pierce the epidermal cells of the plant, after which the mouth parts are inserted into the opening formed, pressed down to the labrum and sucking commences. A minute or so is apparently sufficient to remove all the available sap within reach, after which a new location is taken up and the same process of insertion proceeds again. It will not be necessary for me to describe in detail the mouth parts of these minute insects. This has been done on former occasions by several writers. It is only necessary to receive an impression on the general motions undertaken and to appreciate the nature of the injuries. In addition to the often pronounced injuries caused by direct feeding, which may cause "blasting" of the buds and flowers, leaves and seed pods, the oviposition habits must also be noted. Members of the Thripidæ are provided with a saw-like ovipositor which is used to cut a cavity in the delicate portions of plant growth, such as the pistils, stamens, developing ovules, fruit and leaf petioles, before an egg is inserted. Microtome sections of such plant portions may frequently disclose as many as 8-10 egg cavities. This habit naturally greatly weakens the plant tissue and it is not surprising to find developing fruits, seed pods, etc., failing to mature or dropping off completely as the season advances, due to oviposition injuries alone. More injury is caused by the feeding habits than by oviposition but, in examination, the latter form of injury must not be ignored.

There is a third consideration worthy of mention at this point that relates to the plant breeders. I have seen supposedly careful experiments conducted in the cross-breeding of vegetables under cheesecloth and cheap calico screens which, if they were not entirely negatived, were at least severely endangered by the presence of innumerable thrips within the cages to which the screening presented practically no obstacle. Thrips, particularly on bright sunny days, may be observed passing in and out through the screen meshes and although no immediate examination has been made at the time under the binoculars, it is certain that they carried pollen grains attached to their measurably hairy bodies and fringe-like wings, for pollen grains may be quite commonly seen on live thrips gathered from blossoms under somewhat similar conditions.

It is strange that up until the present time in Canada we can only record one crop which is severely affected by *Frankliniella tritici* and its allied species, despite the fact that these insects occur so commonly. This crop is alfalfa, and Mr. H. L. Seamans, of the Dominion Entomological Branch, is now making an exhaustive study of the economic relationship of *F. occidentalis* to alfalfa in the alfalfa seed-producing areas of Alberta. He has already found that in certain seasons fully 80 per cent. of the young florets and seed pods are destroyed or fail to mature by reason of the activities of this species. It seems possible that the future may show these insects to be of more than passing interest in Canada. There are, however, some observations made in the United States. In California, Arizona and Montana, both *F. tritici* and *occidentalis* are known to cause much damage to alfalfa, much in the manner already mentioned, wherein the floral parts are attacked, causing the premature falling of the flower, or the ovaries or tender stigmas are injured, preventing the development of the seed pod. In New York State, *F. tritici* is not usually injurious though a common species in orchards. Parrott, however, in 1909, noted very extreme injury

to pear orchards in Western New York State wherein "the injured blossom clusters turned brown as if blighted, while the leaves became discoloured about the wounded areas and curled." Similar injury to deciduous fruits has been noted by Morril in the Salt River Valley of Arizona and in California young developing apricots have been, on occasions, severely injured. The floral parts of blackberries and raspberries have been injured also in the mid-central United States, and Quaintance even presented the name of the Strawberry Thrips to *F. tritici* in Florida from its pronounced injuries to this crop. It is probable, however, in this connection that the species involved was *F. bispinosus* or its variety *projectus* and not *F. tritici* as imagined in Florida, a belief that is supported by a later study given the matter by Watson, of Florida, who draws attention to the fact that *F. bispinosus* usually finds its habitat in flowers of an open structure, while *F. tritici* prefers blossoms and parts of plants that are closed. To wheat, oats, peas and like crops notable injury has been caused not only in the United States, but also in Europe at various times. Lastly, attention must be drawn to the possible relation of insects of this class to the distribution of plant diseases, and to the fact that many species, including *F. tritici*, may be predaceous on insect eggs. In our own experience in Canada *F. tritici* has been incriminated as a carrier of blossom infection of Fire Blight, but in the Rogue River Valley of Oregon this species is said to rank high in this connection. Sufficient has been said to indicate the possible relationship of these exceedingly common insects to cultivated crops. It is only necessary to close this phase of the subject by stating that all plants are liable to be infested, but that the typical habitat of *F. tritici* is among the florets of composite flowers, in clusters of young leaves, in any crevice where the tissue is not too tough to be pierced provided the situation is concealed. Shull, in the American Naturalist, Vol. 48, has drawn attention to this fact and records, for example, that the species is usually very abundant in the flowers of white clover (*T. repens*) and red clover (*T. pratense*), while it is rarely found in the related yellow and white sweet clovers (*M. officinalis* and *alba*). The larvæ, likewise, frequents a similar habitat.

## The Systematic Position

It would be well to briefly mention the characters of this insect which has such potentialities as a pest. The term *Euthrips* may have a familiar sound to many present, as it was under this genus that the pear thrips *Euthrips pyri* was dealt with in American literature. *Tritici*, *occidentalis*, *floridensis*, *gossypii*, *helianthi*, *runneri*, *insularis*, *cephalicus*, *fuscus*, *nicotianæ*, *minuta*, *nervosa*, etc., have all been dealt with under the genus *Euthrips*. The genus *Euthrips* now no longer exists, or, if it is employed, is usually applied synonymously with *Anaphothrips*, Uzel. Its use was shown by Hood to be a contravention to Article 9 of the International Code of Zoological Nomenclature. The genera *Tæniothrips* Serville, *Frankliniella* Karny, *Parafrankliniella* Priesner, *Kakothrips* Williams, *Odontothrips* Serville and others are now erected by their respective authors to take care of former members of the genus *Euthrips*. Dr. Karny, in a recent issue of Treubia, has given us some suggestions in key form which assist us materially in separating the related genera of the *Thripinæ*. For our purposes this key is adapted and modified as follows:—

Antennæ 7 or 8, or apparently 9, segmented.

*a*. Fore tibia unarmed;

*b*. Anterior angles of prothorax on each side with a long, strong bristle;

*c*. Prothorax with a rather long bristle in the middle of each.

*Scolothrips* Hinds.

*cc.* Sides of prothorax without bristles;
*d.* Interocellar bristles located on the sides of the ocellar triangle;
*e.* The inner of the two prominent bristles on the anterior margin of the prothorax nearly twice as long as the outer.
*Parafrankliniella* Priesner.
*ee.* The outer of the two bristles the longer.
*Frankliniella* Karny.
*dd.* Interocellar bristles between the posterior pair of ocelli.
*Kakothrips* Williams.*
*bb.* Anterior angles of prothorax without a strong bristle;
*c.* Posterior angles of prothorax with only one strong bristle on each side;
*d.* Head little broader than long; fore wings not regularly set with bristles.
*Scirtothrips* Shull.
*dd.* Head one and one-half times as long as broad. Fore wings with a continuous row of bristles on both wings. *Pscudothrips* Hinds
*e.* Antennæ apparently 9 segmented. *Pseudothrips*.
*ee.* Antennæ clearly 8 segmented. *Glaucothrips* Karny.
*cc.* Antennæ clearly 8 segmented. Posterior angles of prothorax with two strong bristles on each side;
*f.* The front and the eyes greatly enlarged. The 8th abdominal segment without comblike teeth on the posterior margin.
*Cricothrips* Trybom.
*ff.* Shape of the head normal. A comblike structure usually present on the posterior margin of the 8th abdominal segment.
*Tæniothrips* Serville.†
*g.* Sixth antennal segment normal.
*Tæniothrips*.
*gg.* Sixth antennal segment sharply pointed.
*Rhopalandrothrips* Priesner.
*aa.* Fore tibiæ armed at the end with one or two teeth;
*g.* Antennæ 8 segmented.
*Odontothrips* Serville.
*gg.* Antennæ 7 segmented.
*Sminyothrips* Uzel.

Of the genus *Frankliniella* erected by Karny in 1910, over forty species are now recognized. *Thrips intonsa* Trybom was erected by Hood as the genotype, but there is a question whether it is correctly designated. *Frankliniella tritici* Fitch, the species we are concerned with at this time, is briefly described as follows:

FEMALE: Length 1.1-1.2 mm.; width .2-.26 mm.
HEAD: three-fourths as long as broad; back of head transversely striated; ocelli subapproximate pale yellow, margined inwardly with reddish-orange crescents; interocellar spines long, postocular spines shorter, both conspicuous; antennæ, about two and a half times as long as

*Dr. Karny separates these three genera on the presence or absence of abdominal processes on the 8th segment. Inasmuch as certain reduced but recognizable processes may be found in certain female species of *Frankliniella* this character would not appear to be so useful in differentiation as the location of the interocellar bristles.

†Dr. Karny separates *Physothrips* Karny from *Tæniothrips* Serville by the presence or absence of transverse bands on the fore wings. This character is not well stabilized; hence *Physothrips* falls within the genus *Tæniothrips*. *Amblythrips* Bagnall and *Pezothrips* Karny were both erected for wingless species. Information has been received that winged forms have been taken, hence, the characters being the same, the two genera also fall within the genus *Tæniothrips*.

the head; segment 1 pale yellow; segment 2 light brown, dusky, sometimes yellowish as base, symmetrical in outline, without bristle bearing hump and no bristles markedly enlarged; segment 3, light brown or dusky at apex, light yellow in basal half (the longest joint of the antennæ); segments 4 and 5, dusky, brown, light yellow in basal half, 4 about 1½ times longer than the 5th joint; segment 6, brown, about equal in length to 4; segments 7 and 8 (style) brown, the last segment nearly twice the length of the 7th; spines in segments 2-5 usually stout and conspicuous.

Prothorax: three-fourths as long as broad, slightly longer than the head, normal; wings, slightly shaded, costa bearing 26-28 evenly placed spines, fore vein 20-22, hind vein 15-18, scale 5, interior 1; legs concolourous with body, usually pale yellow or slightly shaded light brown, a pair of stout spines at extremity of each tibia, spines on inside of hind tibiæ rather weak.

Abdomen: Normal in shape, in the darker forms there is usually a brown stripe on anterior edges of segments 2-7, dorsal plates also more or less brown, tip of abdomen slightly darker than other segments, without any pale areas on abdominal sternites, spines prominent and shaded brown on lighter coloured portions of the abdominal segments.

It is well to point out, however, that the species is very variable in colour, as is to be expected in one with such a wide distribution with so many different types of habitat. There are some very complex relationships to *F. occidentalis* Pergande and *F. californica* Moulton, which will only be properly settled by an exact morphological study or by breeding.

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## SOME NOTES ON THE BIOLOGY OF TWO BUPRESTIDS INFESTING BLACKBERRY AND HAZEL

*Agrilus ruficollis* and *A. politus*.

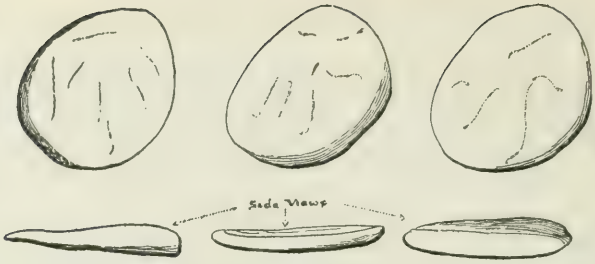
C. B. Hutchings, Entomological Branch, Department of Agriculture, Ottawa

During the past summer we had an opportunity of observing the activities of *Agrilus ruficollis* upon Blackberry (*Rubus villosus*), and *Agrilus politus* on Hazel (*Corylus rostrata* Ait). In a plot adjoining our field laboratory at Queen's Park, Aylmer, were scattered thick clumps of brambles and hazel shrubbery upon which the beetles were discovered in considerable numbers. A study of these was begun and the notes taken have been embodied in this paper.

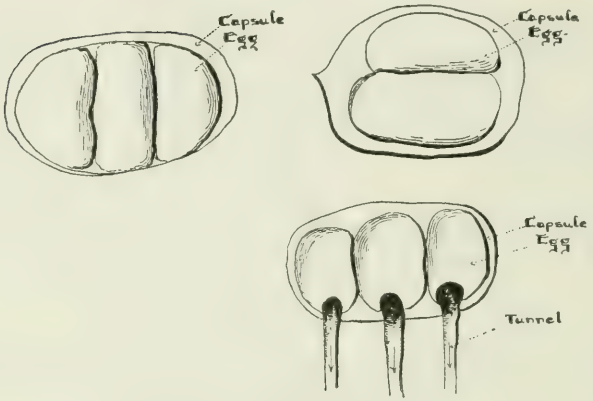
I am indebted to my field assistant, Mr. Reginald Balch, for his help in this connection.

*Agrilus ruficollis* Fab. The adults were first seen about the third week in June feeding freely upon the upper leaf surfaces of blackberries and raspberries, and also, sparingly, upon the purple flowering raspberry, *Rubus odoratus;* a decided preference being shown for blackberries. When approached cautiously the beetles could be taken easily by hand, but if one failed to catch them then they would promptly feign death, or dodge beneath the underside of the foliage, or quickly seek other feeding grounds by short rapid flights. While an occasional beetle might be seen on the bushes almost at any time of a bright day, the noon hours and early afternoon when the sun was brightest and hottest, favoured their appearance in large numbers. The method of feeding was for the most part upon the central areas of the leaf surfaces, where holes irregular in size and outline were made, but the edges of the leaves were also well eaten into. The presence of the small, dark, dry excrement pellets upon the leaves were always good indications of the presence of *ruficollis*. Mating began soon after emergence and pairs were constantly found *in copula*.

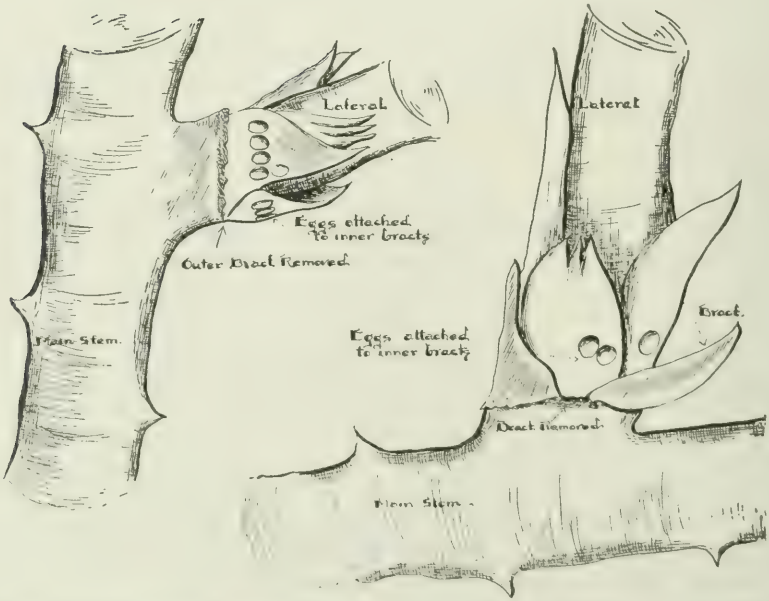
The adult is somewhat cylindric in outline, and rather active, buprestid, measuring from 7 to 8 mm. long and about 1.75 mm. broad across the wing covers. A striking characteristic of this species is the dull coppery bronze




Eggs of *Agrilus ruficollis* (enlarged).




Eggs of *Agrilus politus* (enlarged).




Stems of Blackberry (enlarged) showing location of eggs of *Agrilus ruficollis*.

colour of the prothorax from which it derives its name. The head is decidedly dark and the wing covers dull black.

The eggs are irregularly oval in outline with two sides flattened, and measure, on an average, from 1 to 1.5 mm. across. They are dirty-white in colour with brownish edges, of soft shell, and are deposited either singly or in groups of from two to six, at the axils of the branches, being inserted chiefly between the outer and inner bracts close to the main stem. Hatching begins in three weeks. The young larva on emerging approximates 1.5 mm. in length, is dull white in colour and flat headed. It always enters the branch from beneath the egg, usually at a point near the centre, although 25 per cent. of the larvæ leave at the edge. The empty case is made the receptacle for the first borings, which are of very fine brown dust. After working spirally around the branch, the larva continues on to the main stem of the plant, which it tunnels two or three times in the outer bark tissues before entering the pith. This girdling work causes the stem at this point to crack longitudinally in many places, producing an elliptical swelling, commonly known as gouty-gall and results in killing the branch the following year. Once the pith is entered, the tunnel becomes straightened out and is packed with castings and the larva proceeds to bore upwards. It attains a length of 16 to 18 mm. and is a flat, slender, white, legless grub. Winter is passed in the stem and pupation occurs in May in a specially enlarged cell. The adult then gnaws its way to the surface and escapes through an exit semi-lunar in shape. The tunnels vary considerably in length, from three to six inches or more.

Cutting out the galls in spring and destroying them is a simple and ready method to control this pest. Do this soon after the leaves appear.

*Agrilus politus* Say. This species is of less importance economically than *ruficollis*. It is a serious enemy of the hazel (*Corylus*), and does much injury by forming ugly, knot-like galls on the branches, killing back all attacked parts.

The adult is more robust, less trim in outline, and somewhat shorter than *ruficollis*, averaging about 6.5 mm. in length and 2 mm. in breadth, and is of a dull, uniform bronze colour, the tips of the wing covers being forked.

The eggs are oval in outline, of soft shell, shiny, transparent white in colour, and each about 1.5 mm. long and half as wide. They are laid singly and in small groups of two or three, and covered afterwards with a protective secretion which hardens into a capsule, brown in colour of a shade a little lighter than the bark, being quite conspicuous scale-like objects on the branches. The female, in laying, appears to have no special choice of location, and will deposit a group of eggs near the axil of a small shoot, another group beside a raised portion of bark or lenticle, and others quite often upon the clean, exposed bark surfaces. This habit differs from *ruficollis* in that the last mentioned tucks its eggs safely behind the bracts at the axils of the branches. The period of incubation requires approximately three weeks, hatching beginning about July 20th. The larva eats its way out at the smaller end of the egg, without disturbing the capsule and enters the bark beneath, expelled frass being packed away into the empty shell case. Several groups were under observation, and it was found that the larvæ left at the same end of each egg and bored, side by side in the same direction, for 7 to 10 mm. lengthwise of the twig; then branching out began to tunnel around the twig, near the surface, each circuit being close to the previous one. The branch is consequently completely girdled. This action sets up an abnormal stimulation of growth, cracking the outer bark surfaces and producing ugly, knot-like swellings or galls, eventually killing the branches affected in this way.

The pupal cell is constructed well down in the woody tissues of the stem, and the adult comes to the outside by way of a D-shaped hole, quite characteristic of the genus.

Pupation occurred this year during the last week in May and continued to about the middle of June, the largest number of adults being taken between the 16th and 20th of the month.

The control is the same as in *ruficollis;* viz., cut out the gall-infested branches in spring and destroy.

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## INSECTS OF THE SEASON IN QUEBEC IN 1922

Georges Maheux, Provincial Entomologist, Quebec

The summer of 1922 has been a heavy season for injurious insects. Except perhaps for the field crops, all other groups of plants have had to suffer from the intrusion of numerous enemies.

Fruit Trees. Fruit tree insects were at work early, and kept on attacking the various parts of the trees during the whole season. Tent caterpillars were easily three times as numerous as last year. Both species, *Malacosoma americana* and *M. disstria* have been recorded from different districts. These pests could hardly be seen in the same orchard; their distribution was local and rarely coalesced. In Quebec district the chief offender was outstandingly the Forest Tent Caterpillar, while around Montreal it was the Apple Tent Caterpillar. Large numbers of apple trees were defoliated everywhere where spraying had been omitted or too much delayed.

*Tmetocera ocellana, Cacoecia rosaceana, Aphis mali, Carpocapsa pomonella, Conotrachelus nenuphar* were also prominent. From the ordinary list of fruit tree insects the only exception came from the late summer caterpillars; though fairly abundant in some localities, *Datana ministra, Schizura concinna, Hemerocampa leucostigma* determined by no means serious conditions.

Vegetables. It was a good season for *Leptinotarsa decemlineata*, which started its work early and seemed hard to control in many instances, due to too long intervals between two consecutive sprayings. Large losses from cutworms were experienced by tobacco planters. Maggots in general, cabbage and onion especially, made a good season. *Pieris rapæ* kept last year's good average. *Diabrotica vittata, Epitrix cucumeris* and sometimes *Macrobasis unicolor* had to be watched carefully to avoid serious damages.

Field Crops. An outbreak of grasshoppers, about the same size as last year's, was a serious menace to many oat fields. Damage was cut down to a trifle after a large educational campaign substantiated with field demonstrations carried on in every locality interested. Samples of sweet corn sent to the office proved to be severely attacked by *Heliothis obsoleta*, but this was not general, although this pest seems to be on the increase and may prove troublesome next year in the Montreal district.

Small Fruits. Strawberries were affected by white grubs and *Ancylis comptana*, a leaf roller; no damage to blossoms and fruits were reported. Currants and gooseberries again suffered from *Pteronus ribesii*, that is in gardens where the use of arsenical is not a matter of regular practice.

Shade Trees. Our records show nothing worth mentioning as insect pests; on the contrary, diseases were very important and their injuries very conspicuous on maples especially.

We look on 1923 as a very favourable season for Tent caterpillars and grasshoppers particularly.

## THE FEATHER MITE—A NEW PEST OF POULTRY

L. Caesar, Ontario Agricultural College, Guelph

The presence of a new mite (*Liponyssus bursa*) in this province was brought to my attention by Mr. F. C. Bishopp, of the U.S. Bureau of Entomology, last December at the annual meeting in Toronto, when he informed me that he has seen birds badly infested with the mite which had been shipped into the United States by a certain Ontario poultryman. At once I wrote to this man, informed him of what I had been told, and urged upon him the prompt application of effective control measures as outlined in Circular 79 of the United States Department of Agriculture, of which Mr. Bishopp had given me a copy. Then as soon as my college work permitted I visited his plant and inspected a large number of his birds, but found only one mite, and that one on a feather in a nest. The owner, however, informed me that the birds in one section of his plant had been infested, but that by thorough applications of zenoleum he had, he believed, exterminated the mites. He certainly had at least come very near doing so.

By this poultryman I was given the address of another man, about fifty miles away, who was having trouble with the same mite. This poultryman was then visited, and the mites were found in one of his houses, but as treatment had been carried on here too the birds were not badly infested, though the owner and his wife both said that a few weeks earlier the mites had been abundant in this particular house.

I endeavoured to find the origin of the infestation. The first poultryman said he had got the mites from birds shipped in from the Southern States, but Mr. Bishopp was of the opinion that this must be a mistake. The other poultryman thought he got his from exhibiting at a poultry show in one of our cities.

I have not since had any complaints of trouble in other flocks, but would not be surprised if it should turn out that the mite was somewhat widely spread both in Canada and the United States.

All the adult mites seen were blackish in colour with some white areas, chiefly around the head. Some of the young were blackish like the adults, others were nearly white. The adults look to the naked eye like mere black specks, and, as one of the poultrymen said, when on a bright winter day they cluster upon the tail feathers of a white bird to bask in the sunshine, they make the feathers appear as if dusted with black pepper.

Unlike the common red mite (*Dermanyssus gallinae* De Geer), which attacks poultry only at night, hiding in crevices in roosts and in other places by day, this species usually remains both night and day upon its host. They can be found most easily in the feathers around the vent, but may occur almost anywhere among the feathers. Some of them, however, may also be found in the nest on feathers and other substances.

The eggs are oval, and glossy white, and, so far as observed, were situated in the feathers near the base where they could easily be dislodged by tapping the feathers.

The mites are able to endure a great deal of cold, as I discovered by placing several feathers with mites on them in a bottle and exposing this overnight to a temperature which reached 7° F. Next day, after carrying the bottle in my pocket for a couple of hours, I examined it and found almost all the mites alive and quite active. These same mites were kept in this bottle for 18 days before they all died. These facts show that the pest might easily be transported

long distances even in cool weather in the packages around eggs, even apart from the ease with which they could be transported on the birds themselves. It is possible sparrows may also be a means of spreading them.

How destructive the mites are was not observed, but Mr. Bishopp considers them a serious pest, and one of the poultrymen said that when they became abundant on a bird they quickly caused it to droop and become valueless.

Fortunately control measures do not appear to be specially difficult. Mr. Bishopp found that by thoroughly cleaning out the houses, nests and brooders, burning the nesting material and placing the manure where birds could not reach it, then thoroughly spraying the houses, nests and brooders with carbolineum and dusting the birds heavily with sulphur, the mites could be exterminated.

In this country carbolineum in most places is not easy to procure, hence it seems to me that creosote oil could be substituted. I am also of the opinion that owing to the presence of lice on most poultry it would pay to combine sodium fluoride with the sulphur in the proportions of about four parts sulphur to one part sodium fluoride. A test was made on twenty-one birds, including several breeds, with two parts sulphur to one part sodium fluoride, and, though the dusting was purposely done very heavily, no injury followed, and every louse present was killed. (There were no mites in this case to begin with.)

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## THE GRAPE LEAF-HOPPER

W. A. Ross, and W. Robinson, Dominion Entomological Laboratory, Vineland Station

The Grape Leaf-hopper, *Erythroneura comes* Say, a native American species, apparently occurs in North America wherever grapes are grown. It has been recorded from the eastern states, from California in the west, from Texas and New Mexico in the south, and from Ontario and Quebec in the north. Named and described for the first time by Say in 1825, it has long been known as a pest of grape vines, and has at times caused very serious losses, notably in California and in the Chautauqua and Erie grape belts.

In Canada the hopper is only of importance in the Niagara peninsula—the only section where grapes are grown on an extensive scale. In the past there have been many severe local outbreaks of the insect in the Niagara district, particularly in graperies adjoining bushland, wasteland and other places favourable for hibernation, but prior to 1921, as far as we can learn, there was no general outbreak throughout the district.

### The 1921-22 Outbreak.

Early in July, 1921, we noticed that the Grape Leaf-hopper was present in injurious numbers in several graperies near Vineland, but we did not realize that there was a general outbreak of the insect until the end of the month, at which time the hopper made its presence known in different parts of the peninsula by the mottled and unthrifty condition of the grape foliage. Conditions were favourable for the increase of the pest, and by the time grapes were being cut the adults were so abundant in many vineyards that they annoyed the cutters by getting into their eyes and mouths. The adults went into hibernation in immense numbers, and this spring they emerged in full force, the mild winter having had little if any effect in diminishing their numbers. By the

time the grapes were in leaf, most of the graperies were literally alive with leaf-hoppers. During the period the overwintering adults were on the vines, there were several heavy washing rains. For example, on May 25th there was a rainfall of 1.23 inches, on June 11th 3.08 inches, and on June 17th 1.38 inches. These rain storms reduced the number of adults to some extent (we found hoppers washed into the soil) but not to a sufficient extent to prevent a serious outbreak. During late June and early July hopper nymphs were present in immense numbers, as many as 100 to 800 being found on a leaf, and spraying had to be resorted to in order to prevent serious injury.

The badly infested area extended from the Niagara river to Grimsby—west of Grimsby the insect was abundant in some vineyards, but generally speaking it was of little importance.

It would not be out of place here to say a word about the campaign which was conducted in the Niagara district against the leaf hopper. By means of meetings, short timely articles and circular letters, practically every grape grower in the district was made acquainted with the leaf hopper situation and also with the methods of combating the pest. The success we had in disseminating this information was due largely to the co-operation of the Niagara District Grape Growers' Association, a selling organization with a membership of over 900 growers, covering over 90 per cent. of the total acreage of grapes. The association held meetings at different points for the purpose of discussing the leaf-hopper outbreak, and they sent out copies of the short circular letters, which we prepared, to all their members. As a result of this publicity campaign, most of the grape growers between the Niagara river and Grimsby sprayed their vineyards. In some of the worst affected sections from 95 per cent. to 100 per cent. of the growers treated their vines.

## Life History.

### *The Overwintering Adult.*

Description: See page 55.

Hibernation. The Grape Leaf-hopper passes the winter in the adult stage under fallen leaves, logs and rubbish; among clumps of grass and weeds; and in decayed tree stumps, etc. Woods and waste places, neglected road sides, headlands and ditches; old fence rows and hedges all afford the insect favourable quarters for wintering.

Activities in Early Spring. This spring during March and early April, the adult hoppers were quite active in their hibernating quarters on mild days, when the temperature was in the neighbourhood of 42 degrees F. to 50 degrees F. They jumped readily when disturbed; however, they did not commence to emerge from hibernation until the last week in April, about the time grape buds were commencing to swell. As shown by cage experiments and field observations, they continued to emerge over a period of three weeks.

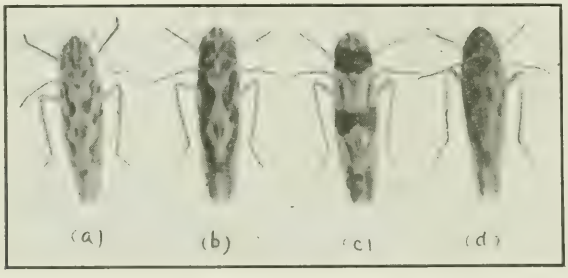
Spring Food Plants. As there are no grape leaves at the time of emergence, the hoppers after their long winter siege are forced to feed on other plants. This spring they were observed first on the leaves of grasses, chickweed, dandelion, strawberry and raspberry, but later on they were found feeding on a large number of other plants, viz.: Sweet cherry, sour cherry, apple, peach, plum, white sweet clover, alsike clover, lucerne, yarrow, catnip, sheep sorrel, Canada thistle, shepherd's purse, hound's tongue, common plantain, wild geranium, bellwort, trillium, violet sp., daisy fleabane, dandelion and curled dock. Strawberry, raspberry and sweet cherry, however, appeared to be the favourite food

plants. In a large cherry orchard near Beamsville the hoppers were present in myriads, and in walking among the trees one would hear a continual "rustle, rustle, rustle," made by the jumping insects. The leaves in this orchard became quite badly mottled as a result of the insects feeding activities.

Migration to Grapes. About May 21st, or in other words, at the time the third leaf on the grape was showing, the hoppers commenced to migrate to the vineyards. The migratory period extended until about the second week in June; the majority of the hoppers, however, were on the grapes ten days after the migration began.

Feeding Habits. The leaf-hoppers feed on the under side of the grape leaves—a decided preference being shown for the lower leaves—and by means of their sucking mouthparts withdraw the juices from the plant tissues. As a result of this feeding, the leaves become mottled, and when badly affected, large, brown, dead areas develop on them. This spring the injury caused by the overwintering adults was sufficiently conspicuous to seriously alarm many of the growers.

Mating. Pairing takes place both on the spring food plants and on the grape. The hoppers copulate frequently and the mating season is extended over a considerable period.




Grape leaf hoppers x 10.
(a) E. comes. (b) E. comes ziczac. (c) E. tricincta.
(d) E. vulnerata.

Mating is accomplished by the male and female bringing the caudal ends of their abdomens together, so that their bodies form a straight line.

Egg-Laying. By means of her sharp lance-like ovipositor, the female deposits her eggs just beneath the epidermis, almost altogether on the underside of the leaf.

Owing to the fact that the lower epidermis of the grape leaf on most of our commercial varieties is densely covered with pubescence, the eggs can be located only with the greatest difficulty. For this reason we found that the simplest method of ascertaining the duration of the egg-laying period was to subtract the period of incubation from the dates when the first and last hatched nymphs appeared. In this way we learned that in the graperies egg-laying commenced about May 24th,* (three to four days after the first adults arrived on the vines), reached its height about June 7th and ceased during the last week of June (June 28th.).

In the insectary, the egg-laying period of eleven females ranged from 18 to

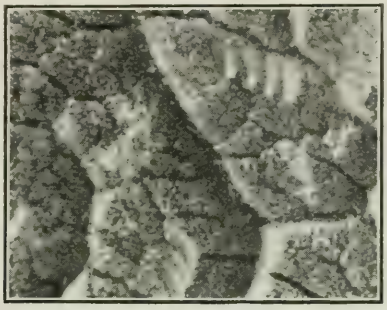
*On *Ampelopsis* eggs laid by *E. comes ziczac* were first observed on May 9th.

33 days, the average being 26 days; and the daily rate of deposition per female varied from one to nine eggs.

Fecundity. Quale, in California, found that the female leaf-hopper will lay from 40 to 121 eggs. In our experiments with eleven couples, only the eggs which actually hatched were counted (it was found to be impossible to do otherwise without mutilating the insectary plants) and the results were as follows: Maximum 89, minimum 38, average 70 eggs.

Length of Life in Spring. In the insectary, females lived from 77 to 87 days after emerging from their winter quarters, and males from 63 to 78 days. They commenced to die off about June 26th, and all had perished by July 20th.

In the field the adults began to disappear during the latter part of June, and most of them were gone by the second week in July. On account of the overlapping of the first brood adults with the hibernating forms, we were unable to ascertain just when the latter completely disappeared.



Grape leaf hopper eggs laid in an Ampelopsis leaf x 10.

## The Egg.

Description. The egg is an elongate, slightly bean-shaped, soft body. It is translucent creamy white in colour, and measures .63 mm. to .70 mm. long, by .16 mm. to .20 mm. wide.

Location. As previously mentioned, the eggs are inserted just beneath the epidermis chiefly on the underside of the leaf, and on any part of the leaf surface. As many as one-hundred to over five hundred eggs may be deposited in a single leaf. They are generally laid singly; the variety *ziczac*, however, commonly lays its eggs in parallel rows with three to ten eggs in each group.

On smooth-leaved varieties of grapes and on the leaves of *Ampelopsis*, the eggs cause little blisters to form, and these egg blisters make it a very simple matter to locate the eggs with the unaided eye. However, on most common varieties of grapes, the eggs are completely hidden from view by dense pubescence.

Period of Incubation. In seven experiments with approximately 200 eggs of the first brood, and in nine experiments with about 200 eggs of the second brood, the period of incubation varied only slightly, viz., from 25 to 27 days.

Duration of Egg-hatching Period. The period during which the eggs of the first brood hatched extended from June 19th, at which time the grape was coming into full bloom, to about July 24th. The majority of the eggs hatched before the second week of July. In table No. 1, the hatching of the

eggs on nine marked leaves is shown. Nos. 1 to 3 were old leaves in which the earliest egg would be deposited; Nos. 4 to 9 were younger leaves:

Table No. 1, Showing Duration of Hatching Period of 1st. Brood Eggs.

| Date | Leaf No. 1 | Leaf No. 2 | Leaf No. 3 | Leaf No. 4 | Leaf No. 5 | Leaf No. 6 | Leaf No. 7 | Leaf No. 8 | Leaf No. 9 |
|---|---|---|---|---|---|---|---|---|---|
| June 20 | 3 | 3 | 1 | .. | .. | .. | .. | .. | .. |
| 21 | 8 | 9 | 6 | .. | .. | .. | .. | .. | .. |
| 22 | 11 | 13 | 17 | .. | .. | .. | .. | .. | .. |
| 23 | 7 | 9 | 8 | .. | .. | .. | .. | .. | .. |
| 24 | 19 | 5 | 16 | .. | .. | .. | .. | .. | .. |
| 25 | 22 | 17 | 18 | 6 | 8 | 8 | .. | .. | .. |
| 26 | 7 | 9 | 4 | 12 | 16 | 10 | .. | .. | .. |
| 27 | 23 | 10 | 9 | 8 | 12 | 12 | .. | .. | .. |
| 28 | 20 | 11 | 22 | 11 | 18 | 16 | .. | .. | .. |
| 29 | 19 | 17 | 10 | 17 | 12 | 21 | .. | .. | .. |
| 30 | 51 | 21 | 16 | 28 | 22 | 17 | 6 | 9 | 2 |
| July 2 | 48 | 39 | 31 | 57 | 29 | 31 | 5 | 8 | 7 |
| 3 | 46 | 45 | 28 | 44 | 38 | 45 | 18 | 11 | 9 |
| 4 | 14 | 11 | 8 | 45 | 20 | 61 | 26 | 18 | 17 |
| 5 | 10 | 4 | 3 | 20 | 19 | 16 | 12 | 18 | 27 |
| 6 | 6 | 8 | 5 | 41 | 13 | 26 | 6 | 8 | 10 |
| 7 | .. | .. | .. | 26 | 13 | 9 | 5 | 2 | 4 |
| 8 | .. | .. | .. | 8 | 10 | 26 | 7 | 8 | 14 |
| 10 | .. | .. | .. | 17 | 21 | 14 | 10 | 8 | 13 |
| 11 | .. | .. | .. | 6 | 4 | 7 | 3 | 7 | 6 |
| 12 | .. | .. | .. | 7 | 5 | 3 | 6 | 6 | 7 |
| 13 | .. | .. | .. | 7 | 10 | 8 | 7 | 5 | 6 |
| 14 | .. | .. | .. | 5 | 4 | 4 | 6 | 3 | 7 |
| 15 | .. | .. | .. | 3 | 3 | 6 | 4 | 3 | 4 |
| 17 | .. | .. | .. | 9 | 9 | 12 | 10 | 0 | 12 |
| 18 | .. | .. | .. | 0 | 2 | 2 | 3 | 0 | 2 |
| 19 | .. | .. | .. | 0 | 0 | 3 | 3 | 0 | 3 |
| 20 | .. | .. | .. | 0 | 0 | 3 | 2 | 0 | 1 |
| 21 | .. | .. | .. | 0 | 5 | 8 | 1 | 0 | 4 |
| 22 | .. | .. | .. | 9 | 4 | 5 | 2 | 0 | 0 |
| 24 | .. | .. | .. | 6 | 0 | 3 | 0 | 0 | 0 |
| Totals— | 314 | 231 | 202 | 503 | 287 | 376 | 142 | 114 | 145 |

Eggs of the second brood commenced to hatch about August 15th, and all had hatched by September 10th.

## The Nymph.

Like other species of *Cicadellidæ* the grape leaf-hopper passes through five nymphal stages, or in other words it moults five times. Descriptions of the five nymphal instars are presented herewith:

*First Instar.* Size .79 to .84 mm. long by .25 mm. to .27 mm. wide. Body very frail and soft, translucent white with crimson eyes; head and thorax slightly broader than the abdomen which tapers to the caudal end; antennæ, thread-like; legs, translucent white; wing pads absent.

*Second Instar.* Size 1.36 mm. to 1.45 mm. long by .32 mm. to .36 mm. wide. Same as first instar except: Body creamy white, eyes becoming pearly; abdomen nearly as broad as thorax; light-yellow irregular spot toward the lateral margins of each thoracic segment, continued on to the head behind each eye; wing pads beginning to appear.

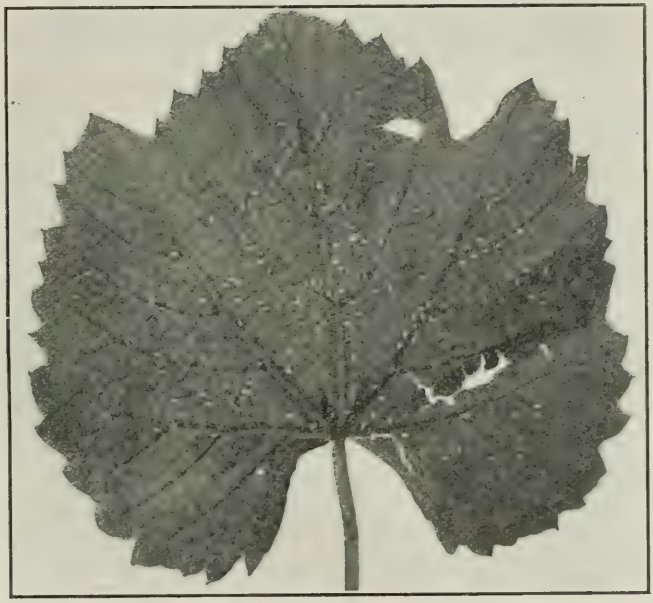
*Third Instar.* Size 1.72 mm. to 1.80 mm. long by .50 mm. to .55 mm.

wide. Same as second instar except the thoracic colour markings more pronounced, and the wing pads extend beyond the first abdominal segment.

*Fourth Instar.* Size 1.98 mm. to 2.16 mm. long, by .54 mm. to .72 mm. wide. Same as second instar except wing pads extend to posterior margin of second abdominal segment.

*Fifth Instar.* Size 2.61 mm. to 2.70 mm. long, by .72 mm. to .81 mm. wide. Same as second instar except wing pads extend to the fourth abdominal segment.

Emergence from Eggs. When hatching occurs the shell of the egg and the leaf epidermis are ruptured, and the soft, round, glossy nymphal head begins to appear slowly—oozing out as it were, like a globule of sap. The nymph gradually wriggles its way out; the appendages which are folded beneath the body slowly become free, and the nymph walks off with a wobbling gait.



Recently hatched leaf hopper nymphs on grape leaf (natural size).

Habits. The nymph inserts its mouth parts into the leaf tissues and commences to imbibe the plant juices an hour or two after it emerges from the leaf; and it continues to feed throughout its entire life except when moulting or when disturbed. It feeds altogether on the underside of the leaf, preferably alongside a vein or in the junction of two veins; but under crowded conditions it will insert its proboscis anywhere on the lower leaf surface.

Ordinarily the nymph will remain until reaching maturity on the leaf on which it was hatched out. It was commonly observed in the insectary that, even on the plants with fresh uninfested leaves, a small colony of nymphs would remain on one leaf until they reached the adult stage. On badly infested vines, however, the nymphs undoubtedly migrate to some extent. In making observations on the hatching of the eggs, it was frequently observed that leaves from which all nymphs had been removed became infested overnight with a few third, fourth and fifth instar nymphs.

Moulting. When about to moult the nymph attaches its claws to the surface and also inserts its mouthparts into the leaf tissue. The old skin splits along the middle of the front, vertex and prothorax, and the nymph with a slight wriggling motion gradually works its way out head foremost. The whole process takes between five and fifteen minutes, and the nymph shortly after moulting resumes feeding.

Last moult of grape leaf hopper nymph.

In the final moult the wings expand to full size as the body emerges from the old skin. The hopper then moves away a short distance and rests until the thin, transparent wings dry. The entire process takes about thirty minutes. The colour markings may not develop for several hours.

The exuviæ of the first four instars are lightly attached to the leaf and are soon blown away. The last moulted skin remains upon the leaf indefinitely.

Length of Nymphal Life. The duration of each instar and the total length of nymphal life of first and second brood nymphs reared in the insectary are shown in the following table:

| First Brood | Minimum | Maximum | Average |
|---|---|---|---|
| First Instar | 4 days | 7 days | 5.7 days |
| Second Instar | 4 days | 6 days | 5.3 days |
| Third Instar | 4 days | 5 days | 4.2 days |
| Fourth Instar | 3 days | 5 days | 4 days |
| Fifth Instar | 3 days | 7 days | 5 days |
| Total Nymphal Life | 22 days | 26 days | 24 days |

| Second Brood | Minimum | Maximum | Average |
|---|---|---|---|
| | | 14 Individuals | |
| First Instar | 4 days | 5 days | 4.2 days |
| Second Instar | 4 days | 6 days | 4.5 days |
| Third Instar | 4 days | 6 days | 4.5 days |
| Fourth Instar | 4 days | 5 days | 4.5 days |
| Fifth Instar | 4 days | 5 days | 4.5 days |
| Total Nymphal Life | 21 days | 25 days | 24 days |

Time of Occurrence of First Brood Nymphs. Newly hatched nymphs were first observed on June 19th, at the time grapes were coming into bloom. From three to ten nymphs to a leaf, the number rapidly increased until by the end of June 200-300 nymphs could be found on a leaf. During the first and second weeks of July, the inner and lower leaves on the vines were literally alive with nymphs—on leaves picked at random from 500 to 800 nymphs to a leaf were counted.

As shown in table No. 1, the nymphs continued to hatch out until about July 24th, and it was not until the latter part of August that all the nymphs of the first brood matured.

Time of Occurrence of Second Brood Nymphs. Second brood nymphs first appeared on August 15th; they continued to hatch out until about September 10th, and all had transformed to adults by October 9th.

## The Summer Adult

Description. Say's description is as follows:

"Body pale yellowish; head, a transverse sanguineous line, profoundly arcuated in the middle, and a smaller transverse spot before; eyes fuscous; thorax with three sanguineous spots, the lateral ones smaller, and the intermediate one arcuated; scutel, a sanguineous spot at tip; hemelytra yellowish white spotted with sanguineous; spots arranged two at base, of which the outer one is small and the inner one elongated and abruptly dilated on the inner side at tip; two upon the middle, of which the outer one is elongated in a very oblique line; two behind the middle, of which the inner one is obliquely elongated, and the outer one smaller and interrupted; and a transverse linear one near the tip, ramose upon the nervures; feet whitish.

"Length to the tip of the hemelytra one-ninth of an inch.

"The line and spot on the head and the spots of the thorax are sometimes obsolete, but always visible, and the latter are sometimes connected by curving toward the anterior edge of the thorax. The spots of the hemelytra are also sometimes slightly interrupted, or connected into four oblique bands."

Colour Changes. During the summer the colour markings of the adults are yellowish. With the approach of autumn the coloured areas become salmon or light reddish, and when the insects go into hibernation the markings deepen into a conspicuous blood red, which colour is maintained throughout the winter. However, when the adults emerge in spring and begin to feed on the grape this colour fades to the light yellow, characteristic of the summer adults and remains light throughout life.

Egg Laying. In insectary experiments with six first brood couples, oviposition commenced six to nine days after the adults reached maturity, the average pre-oviposition period being seven days. Each female deposited from 22 to 46 viable eggs, the average being 29 eggs.* The period of oviposition of the individual varied from eleven to twenty-two days. As determined by subtracting the incubation period from the dates when the earliest and last newly hatched nymphs appeared, the egg-laying period of first brood adults in the vineyards extended from about July 20th to August 17th.

Length of Life. The adults which give rise to a second brood succumb before winter; the others go into hibernation, and, as previously stated, many of them survive until the following July. In the insectary all second brood progenitors perished before the end of September. The females lived from twenty six to forty-seven days with an average length of life of thirty-eight days, and the males from six to seventeen days, the average being fifteen days.

Proportion of Sexes. The males and females of this species are practically equal in numbers. In a collection of 2827 leaf hoppers captured in different vineyards throughout the district, the sex ratio was 48 males, 52 females.

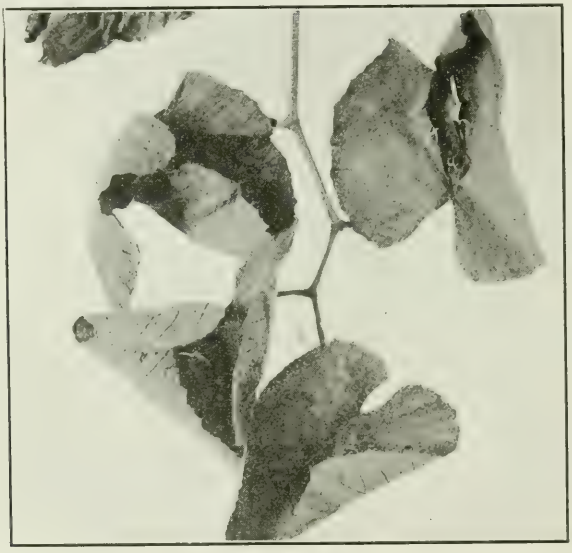
*It should be mentioned that here again only the eggs which actually hatched were counted.

### Number of Broods

There are two broods of the grape leaf hopper, but under our conditions the second brood is only a partial one. This season apparently only the first brood adults which matured during July gave rise to a second brood. In the insectary 7 colonies of leaf hoppers which reached the adult stage during the period July 15th to July 27th reproduced; on the other hand, 11 colonies which matured from July 26th to August 17th failed to lay any eggs and went into hibernation.

### Nature of Injury

The leaf hopper both as a nymph and an adult feeds almost exclusively on the underside of the leaves, preferably close to the veins. The feeding results in the appearance of minute white points on the upper surface of the leaf, no doubt due to the destruction of the chlorophyl. These points coalesce and form white spots, which, as feeding progresses, become more numerous and form



Grape foliage injured by leaf hoppers.

pallid areas, until the whole leaf is mottled and pallid. On badly affected leaves brown dead areas form as a result of the death of the tissues, and in due course these areas may spread until the whole leaf is brown and dry. Severely injured foliage falls prematurely.

Early Injury. This year mottling caused by the feeding activities of the overwintering adults was quite noticeable on the inner and lower leaves by the end of May, and later on in many instances dead brown areas appeared on these leaves. This injury, although confined to the older leaves, made many vines look very unthrifty and was sufficiently conspicuous to alarm many growers.

Summer Injury. During July the feeding of myriads of nymphs and adults in unsprayed graperies gradually deprived the leaves of their green colour, and the vines became conspicuously pallid. The following month the foliage commenced to turn brown and to become dry and curled. Badly damaged leaves dropped prematurely, and as a result of this many vines were largely denuded of their foliage at the time the grapes were ripening.

Relation of Leaf Injury to the Quality of Fruit. The injury to the leaf naturally affects the growth of the wood, but what is still more serious, it affects both the size and quality of the fruit. This season we noticed that grapes on badly infested vines did not attain their full size, and that they failed to ripen properly. Concord grapes instead of having the normal dark blue colour were reddish. As Hartzell has demonstrated by chemical analyses, grape leaf hopper injury has the effect of reducing the sugar and of increasing the acid content. In his experiments he found: (1) "That every sample of Concord from a sprayed section gave a gain in sugar over its mate in the adjoining unsprayed section. These increases varied from 8.4 per cent. to 68.1 per cent., an average of 27.0 per cent." (2) "That in every sample of unsprayed grapes except one, the amount of acid was greater than in the corresponding sample from a sprayed vine. The excess of acid in the unsprayed grapes as compared with those sprayed varied from 0 per cent to 20.6 per cent., an average of 11.2 per cent."

Analyses of Concord grapes this year gave the following results:

| No. | Treatment | Brix Saccharometer | Dextrose Per Cent. | Acid Calculated as Tartaric Per Cent. | Sugar Ratio Dextrose Acid | B. A. R. |
|---|---|---|---|---|---|---|
| 1 | Sprayed..... | 16.4 | 13.41 | .855 | 15.7 | 19.18 |
| 2 | Sprayed..... | 16.4 | 13.75 | .879 | 15.6 | 18.66 |
| 3 | Unsprayed..... | 11.1 | 8.62 | 1.121 | 7.7 | 9.90 |
| 4 | Unsprayed..... | 12.3 | 9.76 | .892 | 10.9 | 13.79 |

## Associated Species and Varieties of Erythroneura Comes

Along with *E. comes* two other species of *Erythroneura* and three varieties of *E. comes* were involved in the outbreak of leaf-hoppers, viz: *E. tricincta*, *E. vulnerata*, *E. comes vitis*, *E. comes ziczac*, *E. comes octonotata*. The distribution and proportionate occurrence of the different species and varieties in the Niagara peninsula are shown in table No. 3.

*E. tricincta* Fitch. Fitch's description is as follows:

"Pale yellow with three broad bands, the anterior velvet black, occupying the thorax and basal half of scutel; the middle bright ferruginous ending outwardly in black, forward of the middle of the elytra, the posterior dusky brown on the apex. Length, 0.12 inch."

Between St. Catharines and the Niagara river *tricincta* was the dominant species, in fact in some vineyards near the river it almost completely displaced *comes*.

Field observations and preliminary insectary experiments indicate that the life history of this species is very similar to that of *comes*. Some data, secured from a comparative study of two colonies of each of the three species of grape leaf-hoppers, are shown in table No. 2.

Table No. 2—Showing Similarity of Life Histories of the Three Species.

| First Brood | E. Comes | E. Tricincta | E. Vulnerata |
|---|---|---|---|
| Eggs Commenced Hatching..... | June 20th | June 21st | June 23rd |
| Earliest Nymphs Matured..... | July 14th | July 13th | July 18th |
| Duration of Nymphal Stage..... | 23-25 days | 22-23 days | 26-27 days |
| Second Brood | | | |
| Eggs Commenced Hatching..... | Aug. 15th | Aug. 13th | Aug. 19th |
| Earliest Nymphs Matured..... | Sept. 8th | Sept. 4th | Sept. 16th |
| Duration of Nymphal Stage..... | 25-26 days | 24-26 days | 27-29 days |

*E. vulnerata* Fitch. Fitch's description is as follows:

"Fulvous brown, spotted and lined with whitish; elytra with an abbreviated yellowish-white vitta on the outer margin, interrupted near the middle by an oblique black line, and toward the apex by an oblique sanguineous one; tips dusky, with whitish nervures and spots; a whitish medial line common to the vertex, thorax and scutel; beneath black, legs pallid. Length, 0.12 inch."

This species occurred in considerable numbers at and east of Vineland (see table No. 3). Apart from the fact that the nymphs of *vulnerata* mature somewhat more slowly than those of *comes*. there are apparently no outstanding differences between the habits and life histories of the two species.

*E. comes vitis* Harris. Description:

"Mostly red above, with two transverse yellow lines on the elytra, surrounding a large central red or brown spot."—(Gillette.)

*Vitis* was taken in large numbers only in one vineyard (Port Dalhousie) and here it was found breeding almost exclusively on Clinton vines.

*E. comes ziczac* Walsh. Description:

"Like *comes*, except that the zigzag line running from the humerus to the inner margin and thence to the cross-nervures of the elytron is broad and smoky or blood brown in colour."—(Gillette.)

This variety occurred on grapes in comparatively insignificant numbers but it was very abundant on and injurious to *Ampelopsis* vines. On *Ampelopsis* the first brood nymphs hatched out and reached the adult stage two weeks earlier than those of *comes* on grape vines. In spite, however, of the early maturing of the first brood nymphs the second brood was surprisingly small. The eggs of variety *ziczac* were commonly found laid parallel to each other in groups of from three to ten eggs.

TABLE NO. 3—SHOWING PROPORTIONATE OCCURRENCE AND DISTRIBUTION.

| Locality | Number Examined | E. comes | Var. 8-notata | Var. Ziczac | Var. Vitis | E. Tricincta | E. Vulnerata | Empoascamali |
|---|---|---|---|---|---|---|---|---|
| Queenston (Ramsay) | 387 | 5% | .... | .... | 3% | 90% | 2% | .... |
| Virgil (Taylor) | 710 | 15% | .... | .... | .... | 80% | .... | 5% |
| Niagara Township (Bufton) | 800 | 15% | .... | .... | .... | 85% | .... | .... |
| Niagara Township (Lee) | 391 | 18% | .... | .... | .... | 75% | .... | 7% |
| St. Catharines (Counsell) | 408 | 15% | .... | .... | .... | 85% | .... | .... |
| St. Catharines (Davis) | 510 | 37% | .... | .... | .... | 58% | .... | 5% |
| St. Catharines (Coles) | 500 | 51% | .... | 1% | .... | 48% | .... | .... |
| Port Dalhousie | 612 | 20% | .... | 3% | *38% | 35% | 2% | 2% |
| (Barnesdale) | 695 | 36% | .... | 2% | 2% | 55% | .... | 7% |
| Vineland (Arnott) | 605 | 82% | 4% | 2% | .... | .... | 10% | 2% |
| Vineland (H. E. S.) | 402 | 52% | .... | 12% | .... | 3% | 5% | 28% |
| Vineland (Rittenhouse) | 470 | 98% | 1% | .... | .... | .... | .... | 1% |
| Beamsville (Hobden) | 483 | 65% | 7% | 5% | .... | 8% | 15% | .... |
| Beamsville (Cox) | 419 | 76% | 2% | 1% | .... | 7% | 14% | .... |
| Grimsby "Mountain" | 210 | 91% | 3% | .... | .... | .... | 4% | 2% |
| Winona "Mountain" | 310 | 80% | 3% | .... | .... | .... | 16% | 1% |
| Winona (Carpenter) | 487 | 48% | 4% | 3% | .... | 29% | 16% | .... |
| Vinemount | 380 | 56% | 1.5% | 5% | .... | .... | 35% | 2% |

*Clinton variety of grape.

## CONTROL

### Spraying

Spray Material. The grape leaf-hopper nymph is very susceptible to nicotine sprays, and is easily destroyed with as weak a dilution of nicotine sulphate as 1-1600. Spraying experiments conducted during the past two years with nicotine sulphate 1-1600 in combination with different materials, indicate that the addition of lime, soap, kayso or bordeaux does not increase the efficiency of the spray to any marked degree, at least it does not when the spraying is done very thoroughly. However, in spite of this, we would not advise growers to use nicotine sulphate alone. This year we urged them to combine the nicotine with bordeaux mixture, and most of them did so. We believe that the bordeaux more than paid for itself by checking to a greater or lesser extent fungus diseases, and by stimulating the vines.

Time of Application. With reference to the time when the hopper spray should be applied, the usual recommendation in the past has been to spray when the maximum number of nymphs are present and before many have transformed to adults; or in other words, when the vast majority of the eggs have hatched. It is not a particularly simple matter (as we found out from experience) to ascertain when the majority of the eggs have hatched, in view of the fact that the eggs are hidden within the leaf tissues. This year we decided that the maximum number of nymphs were present by the end of the first week of July, at which time a few first brood adults had commenced to appear in early graperies, and we advised the growers to spray their vineyards the following week, July 10th to 15th. In all cases where the spraying was thoroughly done during the second week of July, excellent commercial control was secured, but our experience indicates that spraying a week earlier, especially in the early sections, would have been still more effective. Two badly infested graperies at Vineland were thoroughly sprayed on July 3rd and 4th. At this time the most advanced nymphs were on the point of changing from the 4th to the 5th instar. The majority, however, were first and second instar nymphs. This spray destroyed practically all the hoppers, and much to our surprise it also apparently destroyed most of the eggs, because, although the eggs were hatching in large numbers on adjoining vines, only an insignificant number hatched in the two early sprayed graperies. In order to secure confirmatory data regarding the ovicidal value of nicotine sulphate, we sprayed leaves on July 8th with nicotine sulphate, (1) 1-1600, (2) 1-1200, (3) 1-800 and marked some other leaves as "checks." In each experiment lime was added to the nicotine sulphate. On the leaves sprayed with 1-1600 no eggs hatched for 11 days, and after that only 4.4 eggs per leaf hatched. On the leaves sprayed with 1-200 and 1-800, 3.2 and 1.8 eggs per leaf hatched respectively, but no nymphs appeared until 12 days after the application. On the "check" leaves 88.2 eggs per leaf hatched. The evidence secured from these tests and from the two early sprayed graperies that nicotine sulphate destroys the eggs and that eggs on the point of hatching are most susceptible, appears to us to be pretty conclusive, however, in order to secure more positive information regarding this matter, we have planned to conduct a series of experiments in the laboratory with definite numbers of eggs and with eggs of known age.

And now to come back to the question of when the leaf-hopper application should be made, we are of the opinion that it should be put on when the most advanced nymphs are in the fifth instar. In cases where it takes a week or longer to spray the vines, spraying operations might well be started when the earliest nymphs are in the fifth instar. Spraying at the time we recommend gives just

as good, if not better, control of the first brood nymphs as later spraying; it practically eliminates the second brood; in dry seasons it should lessen the danger of staining the fruit; and most probably it would prove to be of greater value in preventing fungus diseases than later spraying.

Spraying Results in the Infested District. As previously mentioned, a very large percentage of the growers in the leaf-hopper affected district sprayed their vines with bordeaux mixture and nicotine sulphate, or lime and nicotine sulphate. In most graperies the bordeaux-nicotine combination was used. As we expected, the results varied from almost perfect control to practically no control; however, we are pleased to say that in the majority of cases, good results were obtained. For example, in thirty-two graperies which we inspected in the Vineland-Beamsville section, good commercial control was secured in no less than twenty-six of them. In the other six, the results were unsatisfactory, due to lateness or to carelessness in making the application.

The most important lessons learned from this year's experience are as follows:

(1) That thoroughness in spraying is more than half the battle. In order to do thorough work, it is essential to use angle nozzles, good pressure and liberal quantities of the spray mixture. By liberal quantities we mean sufficient material to wet practically all the under surface of the foliage—the exact amount required to do this may vary from 120 to 250 gallons per acre, depending on the density of the foliage.

(2) That early spraying i.e. before any nymphs have transformed to adults, will give the most clean cut results.

## Dusting

This year lime-nicotine dust containing 2.2 per cent. nicotine was tested on a fairly extensive scale when the hoppers were in the nymphal stage. The dust was applied by means of a Niagara power duster with a vineyard distributor. When the application was made under ideal weather conditions, the dust brought most of the nymphs to the ground, and results comparable with those secured from thorough spraying were obtained. It was observed that a considerable percentage of the nymphs brought to the ground recovered, and that some of them returned to the vines by crawling up the posts and grape trunks. However, only an inconsiderable number of them actually got back to the leaves. (In one dusted grapery we noticed ants carrying the nymphs off). Different amounts of dusts varying from 20 to 60 lbs. per acre were used, but out experience indicated that 35-40 lbs per acre was the most economical and effective dosage. With improved dusts and machinery, we are of the opinion that this amount could be cut down very materially.

With our present outfits effective work can only be done with contact dusts when the atmospheric conditions are very calm. Unfortunately, as we found out from experience, these conditions, in sections bordering the Lake Ontario, are seldom present when wanted. Only too frequently this past season dusting operations had to be suspended even at night and early in the morning because the air was not sufficiently calm. Dusting is largely a fumigation process—it is the nicotine fumes which kill the insects—and if some means could be devised whereby the fumes could be held longer among the foliage, the efficiency of contact dusts would be greatly increased. It is possible that this could be effected by shooting the dust into a light canvas structure with a top and two side pieces, suspended over the grape row from a boom. This idea is given for what it is worth.

## MECHANICAL DEVICES AS AIDS IN THE CONTROL OF THE STRAWBERRY ROOT WEEVIL (*O. ovatus* L.)

W. Downes, Gordon Head, B.C.

Experimental work on Stawberry Root Weevil control has been carried on during the last four years at Gordon Head near Victoria, British Columbia, and one of the principal features of this work has been the trial of various weevil-proof barriers. It was realized early in the work that while the established methods of keeping the weevil in check by the use of proper crop rotation, and by ploughing up infested fields in the fall, were efficient enough so far as they went, yet these methods did not prevent the weevils from passing from one plantation to another and re-infesting newly-planted fields. Moreover, efficiency in control by cultural methods only, is dependent very largely in a closely settled district upon co-operation between neighbouring growers, and with the varying opinions held by many as to the best cultural practices and weevil control methods, such co-operation is nearly impossible to bring about. The desirability

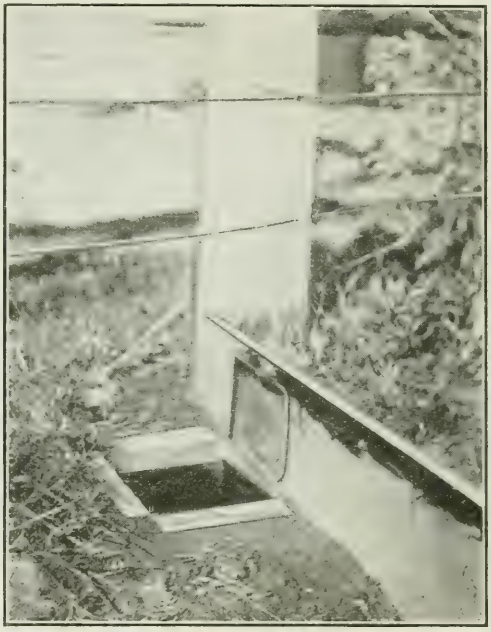
Crude oil barrier at Gordon Head, B. C.

was apparent, therefore, of providing some barrier or device which would make a grower independent of his neighbour's plans. Also, weevil control by cultural methods entails the replanting of fields every third year, as even with the best of care it is generally found that only two crops of berries can be depended upon.

To meet this deficiency in our weevil control methods two types of weevil-proof barrier have been tried at Gordon Head. Both of these barriers have given excellent results, in that it has been found possible not only to keep plantations nearly free from attack, but by their use to destroy the hordes of adult weevils passing from one plot to another or from adjoining infested land, so that the menace from their presence is removed and the risk of infestation annually becomes less.

The first kind of barrier tried was of the tanglefoot type, as first suggested in 1912 by Prof. Lovett in Oregon. It is constructed of 1″ x 12″ lumber, set on edge about two or three inches in the soil and supported at the joints by 2″ x 6″ posts eighteen inches in length to which the boards are nailed or bolted. Bolts are preferable to nails as warping is thereby largely overcome and the barrier

can be readily taken apart. Those portions of the lumber that enter the ground are tarred. A band of tanglefoot is smeared along the upper edge. Since the wood absorbs a certain amount of the tanglefoot it is a good plan to give the upper two inches a coat of paint and if cedar lumber is used this is essential. On the sides chiefly exposed to the sun it has been found a good plan to place an overlap of half inch by four inch wood. Staples are driven into the edge of the overlap and other staples passed through them and then driven into the top of the barrier, thus forming a hinge so that the overlap can be raised when the sticky band requires attention. One or two nails are driven through the tanglefoot to keep the overlap from touching. It was found that a band protected in this way lasted three times as long as one without, as the effect of exposure to the direct rays of the sun is to dry out the tanglefoot. About every fortnight the tanglefoot must be scraped to keep the surface in good condition or as often



Trap No. 2 at Keatings, B.C., which captured 17,000 weevils.

as it becomes dust coated and when it has been in use about three months it should be removed entirely and a fresh band spread. If properly constructed and kept in good condition this is an entirely efficient barrier, but it was found almost at the outset that it could be immensely improved by placing traps to catch the weevils at intervals along the outside of the barrier. Strawberry Root Weevils cannot fly and coming to the barrier they have a natural tendency to follow it along on the soil surface rather than attempt to cross it, so that if traps formed of shallow flat sided tins filled with coal oil and water are sunk in the ground against the side of the barrier, the weevils fall in and are drowned by thousands.

The trap I have used with much success is formed of half a coal oil tin sunk in the soil against the side of the barrier. The edges should be turned back at right angles for about an inch and pressed down flat on the surface of the soil. At the back, against the side of the barrier a sheet of glass is fixed by two or

three small nails, and the tanglefoot strip brought down to meet the glass, so that the weevils crawling along the barrier are forced to walk onto the glass. The tin is partly filled with water and about a cupful of coal oil is poured on top. The traps are more effective if the glasses are kept well cleaned. The weevils either fall directly into the trap or walking on the glass slip off that into the water. It has been found necessary to fix a "leader" or strip of wood at each side of the glass to induce the weevils to walk on it. These strips are the same thickness as the glass where they touch it and are bevelled to a thin edge at the other side.

Recently the efficiency of these traps was strikingly illustrated. A grower had placed a tanglefoot barrier around two sides of a badly infested plot of about one acre in extent to prevent the weevils from crossing onto newly planted land adjoining. A trap as above described was placed at each end of the barrier and one in the angle at the corner of the plot. The corner trap (No. 1) was put down in the first week in July and those at the ends (Nos. 2 and 3) on the 12th of August. The number of weevils destroyed was extraordinary. The traps were cleaned out on September 1st and about two quarts of weevils were taken out of No. 1 and half the quantity out of No. 2. After the weevils had been dried and foreign matter removed, the numbers were computed by dividing the weight of 6,000 weevils, carefully counted, into that of the bulk. According to this method there were approximately 44,660 weevils in trap No. 1, and 17,000 in trap No. 2. Trap No. 3 was not counted, owing to the putrid condition of the contents, but there were fully as many as in trap No. 2. Consequently the total number of weevils caught in these three traps could not be far short of 80,000. In each trap there were several dead mice, and in one the remains of a bird and a lizard. Their putrefying bodies gave an odour to the entire contents which made the job of counting a most unsavoury one, so that after completing the examination of traps 1 and 2 the writer concluded that he had done enough.

The following is an analysis of the different kinds of insects caught and it shows that the number of useful species destroyed is not very appreciable:

Trap No. 1 (in use for 2 months)

| | | | |
|---|---|---|---|
| O. ovatus | 44,660 | Spiders | 15 |
| Other weevils | 33 | Hymenoptera | 5 |
| Carabidæ | 77 | Hemiptera | 4 |
| Silphidæ | 11 | Termites | 4 |
| Staphylinidæ | 1 | Coccinellids | 6 |
| Sow Bugs | 60 | Grasshoppers | 3 |
| Lamellicorns | 19 | | |

Trap No. 2 (in use for 3 weeks)

| | | | |
|---|---|---|---|
| O. ovatus | 17,000 | Sow Bugs | 32 |
| Other weevils | 17 | Spiders | 4 |
| Carabidæ | 33 | Hemiptera | 26 |
| Silphidæ | 5 | Coccinellids | 2 |
| Staphylinidæ | 8 | Diptera | 1 |

The second type of barrier combines the advantages of a barrier and trap in one. It is constructed of heavy lumber, usually 2″ x 10″ with a V-shaped groove in the upper edge. The groove is 1½ inches deep and 1 inch wide. It is supported at the joints by 2″ x 6″ posts, and the ends of the groove are blocked and rendered oil tight. The groove is filled with crude oil of the type used for spreading on roads. This kind of barrier needs very little attention, beyond seeing that the groove contains sufficient oil and that leaks do not occur. It has the disadvantage that it can only be used on level or nearly level land and on sloping land it must be built in steps to keep the troughs level and a little tanglefoot

is placed at the joints where the weevils might cross. It is almost impossible for weevils to cross such a barrier. They have been seen to crawl through the oil but they never survive. This type of barrier is at present the one most generally used by growers in the Victoria district. It was first used at Gordon Head by Mr. G. Vantreight who placed a barrier of this description between two of his plots and thereby saved his young plantation from destruction by the weevils crossing from the old plot. Later we used an improved form of this barrier on our experimental plots. Access to the field is by means of a panel which can be removed to allow a team to pass.

The cost of these devices is an important matter, and hitherto there has been a certain amount of objection to them on the score of expense. The costs have now been greatly reduced, and one important fact must not be lost sight of, that these costs are not an annual charge, because the barriers last for a number of years. The barriers can now be erected for a sum of from $60 to $78 for one acre including labour, the cost for several acres being proportionately less. The annual upkeep in the case of a tanglefoot barrier would be $25 and for an oil barrier $10 per acre. The *minimum* time that the barriers would be expected to last is three years, and thus the total expense for three years would be approximately from $90 to $120 or from $30 to $40 per acre per year. But as a matter of fact the barriers will last very much longer than this and there is no reason to suppose that given ordinary care and protection against decay when first erected that the lumber would not last for five or six years. We are still using at Gordon Head lumber that has been in use for four years which only received a coat of paint and it appears to be still in serviceable condition.

It has been difficult, owing to the fact that growers have had two unprofitable years in succession, to induce them to spend anything at all on weevil control, and they do not realize that the expense is spread over a number of years. The average value of a full crop of strawberries in this district is $800 per acre, so that the annual charges suggested above are not by any means high. Growers who are using barriers are unanimously in favour of their use. As one of them, who had at first been rather sceptical, remarked to me the other day: "I can see now that this thing is going to pay for itself many times over."

To sum the matter up, it appears as if the growing of strawberries between barriers in a weevil infested territory was coming to be a recognized necessity. Local growers are becoming strongly impressed with the idea, and recognize that the immunity from weevil attack which the barriers provide will abundantly justify the outlay. One of the principal advantages claimed for the barriers is that a grower can now depend on obtaining more than two crops from one planting and owing to freedom from weevil the fields may remain in strawberries for four years or even longer. The presence of other pests than weevils, however, may upset this comfortable belief, but at present there seems to be no doubt that the adoption of these aids to weevil control will be of the greatest value in obtaining larger returns for the strawberry grower.

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## RECENT WORK ON THE ROSE CHAFER IN ONTARIO

W. A. Ross and J. A. Hall, Dominion Entomological Laboratory, Vineland Station

In certain sandy sections of Ontario, such as at Fenwick, Oakville and Simcoe, the rose chafer has proved to be an extremely troublesome and destructive pest of grapes, other fruits, flowering plants, etc. At Fenwick the rose

chafer has been particularly injurious for a number of years. For example, in 1921 it destroyed practically the whole crop in several graperies in that district, besides injuring other crops. The high prices obtained for grapes in 1921 made the growers feel this loss very keenly, and at a meeting held in Pelham Centre on March 15th, they passed a resolution strongly urging the Dominion Department of Agriculture to send an Entomologist to their district to investigate the chafer problem. A petition to the same effect was forwarded to the Deputy Minister of Agriculture by the Pelham Township Council. In response to these requests, the junior writer was sent to Fenwick the latter part of May, and for the next three months or so, devoted his whole time to a study of the rose chafer and its control. The following notes are based on this study and on observations made in previous years.

Rose chafers feeding on apples.

## Food Plants and Nature of Injury

The rose chafer feeds on the blossoms, fruit and leaves of a host of plants; in fact, it is almost omnivorous. It destroys the blossoms and newly-set fruit of grapes, and skeletonizes the foliage, although this leaf injury is seldom important. It eats out holes in apples, peaches and other fruits—we have found as many as twelve beetles clustering on one small apple. It may defoliate sweet cherry and peach trees. It may skeletonize strawberry plants, as it commonly did this past year; and much to the distress of amateur gardeners, it plays havoc with the blossoms of roses, peonies and some other ornamentals. Generally speaking, it shows a preference for the blossoms of its food plant, if these are present. The following list of food plants, in which the plants are presented more or less in the order of their susceptibility, will give some idea of the catholic taste of the chafer.

Grapes, Roses, Peonies, Sumac, Sweet Cherries, Strawberries, Milkweed, Wild Grape, Apples, Peaches, Raspberries, Blackberries, Virginia Creeper, Corn, Beans, Rhubarb, Ox-eye, Daisy Bracken, Dock, Sorrel, Beets, Cabbages, Peppers, Chestnut, Walnut, Sour Cherries, Plums, Birch, Mountain Ash, Grasses, Poison-Ivy, Smartweed, Mullein, Red and White Clovers. The beetle is also said to attack: Quince, Magnolia, Poppy, Hollyhock, Foxglove, Willow, Alder, Tulip Tree, Sassafras, Sour Gum, Oak, Hawthorn, Dogwood and Elder.

In the Fenwick infested area no chafers were found on the following cultivated plants: Currants, Gooseberries, Potatoes, Tomatoes, Onions, Tobacco, Sweet Clover and Peas.

Chafers Poisonous to Chickens. Chittenden and Quaintance in Farmer's Bulletin No. 721, U.S.D.A., state that cases have been reported of hundreds of chickens being killed by eating rose chafers. They refer to experiments conducted by Lamson, which indicate that the body of the rose chafer contains a neurotoxin, probably derived from the plants on which it feeds, and that this poison affects the hearts of small animals such as chickens. Last June we received a report from Oakville to the effect that a large number of chickens had died as a result of eating chafers. On investigating this, we found that considerably over 100 range chickens from five to six weeks old had been killed. In a post-mortem examination, 68 chafers were found in one chicken, and 32 in another. Only one chicken older than six weeks died, and it was about four months old. According to the owner of the flock, hens and young turkeys refused to eat the beetles.

A. Grape blossom cluster destroyed by rose chafers. B. Normal blossom cluster.

## LIFE HISTORY

### The Adult

The adult is an ungainly, somewhat slender, long-legged beetle about 3-8 inch long. The wing covers are reddish-brown, the head, thorax and ventral surface are blackish in colour; and the whole body is densely covered with small yellowish hairs, which make the beetle look as if it were fawn-coloured.

Emergence. In 1921 the beetles were first noticed at Fenwick on June 2nd. This year they commenced to emerge from the soil on June 4th, five days before Concord grape blossomed; they continued to emerge for almost two weeks, and by mid-June they were present in immense numbers. After emerging, and before invading the graperies and gardens, the beetles generally clung for sometime to the grass and weeds growing near the place of emergence, hence it was no uncommon sight to see the grass and weeds in a neglected field literally alive with chafers.

Habits. The beetles are very voracious—they feed and keep on feeding and do not even allow mating to interfere with their feeding. As mentioned before they show a decided preference for the blossoms when these are present.

Mating commences shortly after the adults emerge, and copulating couples may be found almost as long as any beetles are present. It would appear that up to the time egg-laying commences, mating is almost continuous.

Egg-Laying. The females deposit their eggs in sandy soil—in grain and grass lands, in neglected fields, and to a lesser extent in cultivated land such as cornfields, raspberry patches and graperies. So far as we could ascertain they do not oviposit in heavy soils.

In egg-laying the chafers burrow into sandy soil and lay the eggs at a depth of from three to six inches. The females apparently are not very prolific. Smith found that the number of eggs deposited by a female varied from 24 to 36, and in our experiments with eight couples, the average was 27 eggs per female.

According to our field observations oviposition commenced on June 15th, that is, eleven days after the earliest beetles emerged.

Duration of Chafer Season. The beetles were present in large numbers for about three weeks and then they commenced to disappear and some four weeks later they were all gone. The length of adult life apparently varies from about three to five weeks.

## The Egg

The egg is oval, smooth, shining-white in appearance, and is about 1.2 mm. long.

We found the eggs laid in groups of from six to 25 at a depth of from three to six inches in the soil—each egg in a separate pocket.

Hatching and Period of Incubation. The duration of the period of incubation is about two and one-half weeks. The earliest hatched larvæ were found in the field on July 3rd, that is 18 days after the first eggs were deposited. Eggs kept in pill boxes hatched in from 15 to 16 days.

## The Larva

The larva is very much like a small white grub. When full grown it is about three-quarters of an inch long.

Habits. The larvæ feed on the roots of grasses, grains and some weeds, and our observations indicate that they also feed to some extent on the roots of clovers. During the summer they occur in uncultivated land at a depth of from one to three inches. They are almost full grown by fall, and on the approach of winter, they descend to a depth of six to 16 inches*, and there they spend the winter. In spring they come near the surface again and resume feeding. During the latter part of May they transform to the pupal stage. Pupation commences about the time the third leaf of the grape is showing. This past year on May 20th—our first day at Fenwick—a very large percentage of the larvæ had pupated.

In heavily infested sections the larvæ are present in the soil in very large numbers. We frequently found over 100 larvæ to the square yard, and in one field at Fenwick we counted 549 larvæ in one square yard and 510 larvæ in another.

*On November 11th, 1922, out of a total of 1,176 larvæ 970 or 82.48 per cent. were found in the top 6 inches of the soil, 202 or 17.18 per cent. between 6 and 8 inches, and only 4 or .34 per cent. between 8 and 10 inches. On December 23rd, 1922, out of a total of 723 larvæ only 3 or .41 per cent. were found in the top 6 inches, 286 or 39.55 per cent. at a depth of 6 to 10 inches, 344 or 47.58 per cent. at a depth of 10 to 14 inches, 73 or 10.1 per cent. at a depth of 14 to 18 inches and 17 or 2.36 per cent. at a depth of 18 to 24 inches. 689 larvæ or 95.29 per cent. were located between 6 and 16 inches from the surface.

### The Pupa

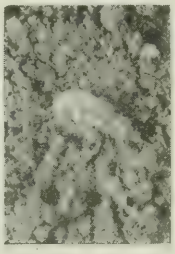
The pupa is about one-half inch long, is yellowish-brown in colour and has the shrivelled larval skin attached to the posterior end. It is found in the soil in a little earthen cell, at a depth of three to seven inches.

Duration of Pupal Stage. An attempt was made to determine definitely the duration of this stage. Larvæ and pupæ were reared in pill boxes, but all succumbed before reaching the adult stage. Our observations in the field indicate that the insects are in the pupal stage about three weeks.

### Breeding Grounds

During the latter part of May, a survey was made of sections of the infested area at Fenwick, in order to locate the principal breeding grounds. As a rule, in doing this work, the owner of the farm which was being surveyed was requested to accompany us, and in this way we were able to show the growers where the insects were breeding.

Rose chafer larva or grub x 2.



Rose chafer pupa (natural size).

Some of the data secured from this survey are as follows:

Neglected raspberry patches: Six plots (1 square yard) were examined and from 68 to 177 larvæ and pupæ per square yard were found, the average being 115.

Uncultivated graperies: Seven plots were examined and from 16 to 135 insects per square yard were found, the average being 84.

Land in grass during 1821-22: Nine plots were examined, and from 18 to 105 insects per square yard were found, the average being 45.

Land in oats or wheat during 1921: Six plots were examined and from 20 to 51 insects per square yard were found, the average being 30.

Well-kept lawns proved to be practically free.

Rather to our surprise only an insignificant number of insects were found in roadsides at Fenwick. However, this fall at Oakville, roadside plots yielded from 40 to 184 larvæ per square yard, with an average of 84.

In land which had been planted to corn, potatoes or grapes, and which had been well cultivated during the season of 1921, no pupæ or larvæ were found.

No insects were located in clay, clay loam or in gravelly soils.

The breeding places were largely confined to areas near graperies.

Surveys of sections of the Fenwick and Oakville infested areas made this fall, furnished us with additional evidence that neglected sandy fields are the all-important breeding places, and that the rose chafer does not breed at all in heavy soils. It is of interest to note here that in a common at Fenwick, 549 larvæ were counted in one square yard.

## Control

### *Cultivation*

It is very evident from what has been said that the importance of cultivation as a means of combating the rose chafer cannot be over-emphasized. We have mentioned that the ovipositing adults are not attracted to cultivated fields to the same extent that they are to uncultivated land, and we have also referred to the fact that land in which cultivated crops such as corn and potatoes are grown, will be free or practically free from larvæ and pupæ the following spring. We have no information so far relative to the value of fall ploughing or of early spring cultivation, but we do know that the ploughing and cultivating of infested fields during the latter part of May and early June, or in other words, during the period the insect is in the pupal stage, is very fatal to the chafer. The pupæ are very readily destroyed by cultivation. Our field observations last spring indicate that all or practically all the pupæ which were disturbed by the plough and cultivator died. In eight cage experiments stirring the soil destroyed 100 per cent. of the pupæ.

### *Spraying*

In 1921 two spray mixtures, *viz:* (1) arsenate of lead powder three lbs, molasses one gallon, water 40 gallons and (2) self-boiled lime sulphur (8-8-40), were tested in three graperies at Fenwick, the growers making the applications themselves. The sweetened arsenate of lead gave good commercial control on grapes, and was found to be even more effective on sweet cherries. On the other hand self-boiled lime-sulphur proved to be absolutely useless, and where it was applied practically the whole crop was destroyed by the beetles. This was rather surprising in view of the fact that self-boiled lime-sulphur is used for repelling rose chafers in New Jersey. Personally, we could not see that it had any value as a deterrent, as we found the beetles attacking blossom clusters and foliage well coated with spray.

This year we made a special effort to get all the growers in the affected district to spray their grapes, and our efforts met with a very large measure of success. Several growers expressed themselves as being skeptical about the value of spraying. They informed us that experience had shown them that the chafer "grew fat" on arsenate of lead. However, they were willing to give what we suggested a trial. The spray mixture we recommended and the one which was generally used consisted of four lbs. arsenate of lead powder, one gallon molasses, 40 gallons of water. We increased the dosage of arsenate of lead to four lbs, in order to increase the liability of the beetles consuming a killing dose before they were repelled by the toxic effects of the arsenical. For psychological reasons we wanted to make it possible for the grower to readily find dead beetles near his sprayed vines, and we are glad to say that the increased dosage had the desired effect. The growers, even the skeptics, had no trouble in finding fairly large numbers of dead beetles in the sprayed graperies.

The number of applications given varied from one to four, depending on the severity of the infestation, and on the weather conditions. We had several heavy rains during the chafer season, and this made it necessary in most cases to put on extra applications. In the average season one or two sprays should be sufficient.

The spray mixture proved very effective in saving the crop of grapes. In twenty-four sprayed graperies the average estimated loss was three per cent., while in seven unsprayed graperies the estimated loss was 84 per cent.

In the grapery which we sprayed, three applications of sweetened arsenate of lead gave almost perfect protection. The chafer injury was so trifling that we did not attempt to express it in terms of a percentage.

Sweet cherry trees, one-year-old strawberry patches, cabbages and peppers were also sprayed with sweetened arsenate of lead, and in all cases the spray gave good results.

Other Spray Materials. Three applications of bordeaux mixture with an excess of lime (4-25-40) proved to be useless as a deterrent. Practically all the blossoms were destroyed on the row sprayed with this material. Calcium arsenate (three lbs. powder, five lbs. hydrated lime, 40 gallons), was quite ineffective in protecting the crop. A 10 per cent. nicotine sulphate dust was also tested, but failed to kill the beetles.

### *Recommendations for Control*

Our present recommendations for the control of the rose chafer are as follows:

In affected districts an organized effort should be made to reduce waste sandy land to a minimum. As much of the land as possible should be worked, and, if possible, fields should not be left in grass for longer than one season.

As much as possible of the land surrounding the vineyards should be kept in cultivated crops, such as corn and potatoes.

Old neglected fence rows should be broken up.

*All breeding places should be ploughed and cultivated frequently at the time the chafers are in the pupal stage, that is, from about May 20th to June 10th.*

Grape vines, sweet cherry trees and one-year-old strawberry patches should be sprayed as soon as the beetles attack them with arsenate of lead powder four lbs., cheap molasses one gallon, water 40 gallons. Especially in the case of graperies one, two or more extra applications may be necessary, the number of sprays of course depending on the severity of the infestation and also on the weather conditions, in view of the fact that heavy rains wash the material off. We have no information relative to the value of this spray as a means of protecting apples.

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## OVIPOSITION OF HYPERA PUNCTATA

H. F. Hudson and A. A. Wood, Dominion Entomological Laboratory, Strathroy

During our preliminary studies on the life history of the clover leaf weevil, the opportunity to study the act of oviposition has occasionally occurred. So far as the present writers are aware the published data on this rather interesting point is somewhat meagre, and these observations may add something to our general knowledge. They have all been made under insectary conditions, at different hours of the day and night, and may to a certain extent coincide with conditions as met with in the field. In choosing a suitable location for egg deposition unusual care is exercised. The fresh succulent petioles with a more or less solid stem are never chosen unless to deposit a mass on the side of the stem. A petiole that is mature or slightly withered, having a partially hollow centre, is usually selected. Generally eggs are introduced into the petiole through a very small puncture, just above the sheath, or about ¾ inch below the leaflets, although they may be placed anywhere along the stem. Large masses may be laid outside on the petiole or in the sheath; in the latter case a small puncture is made

in the side and the eggs introduced. Eggs may sometimes be laid on the glass, but this is rather unusual except with the first batch of eggs, which is usually infertile. When opportunity was given eggs were freely laid in wheat stems. Temperature perhaps is a more important factor in egg laying than darkness. A cold night will retard egg laying, in fact at a temperature between 45° and 50° egg laying ceases. Cool nights also retard feeding, but with the morning sun the beetles become active and egg laying may be accomplished at any hour of the day. Were it not for these daytime ovipositions these observations would never have been recorded, for to approach the breeding cage at night with a light will instantly cause the female to leave the plant and seek seclusion. But in the daytime when the female has started in earnest to lay, the hand lens may be safely used for she will not leave her work or position. The following are some notes made during the act of oviposition:

Morning of September 15th. The female in breeding cage No. 17 was noticed to be very uneasy walking up and down the plant, and carefully surveying the situation. Having selected a petiole that seemed suitable to her liking the leaf was severed in six minutes. After accomplishing this she secreted herself beneath the leaf. Remaining there only a few minutes she proceeded up the stem again. Bracing herself to the petiole, she began rasping a small hole. She did not feed. Just a minute was required to make the opening. Thirty-six movements of the body were noted in the placing of nine eggs. The time occupied was a little over seven minutes. Contrary to the observations of some authors the eggs are forced up or down the stem by the ovipositor not by the rostrum. The beetle under observation did not change her position, and when the stem was opened it was found there were five eggs above the puncture, two below, and the balance inserted at the puncture. Those at the base and nearest the puncture were more compressed than those higher in the petiole. This is quite frequent, and can be commonly observed in splitting open a small stem. An egg puncture is quite different to a feeding puncture. In the latter case the puncture is larger and smooth, while in the former it is much smaller and the opening is left rough.

September 19th. Visiting the insectary at 12.45 p.m. a female was observed completing an egg mass of nine eggs on a green petiole, near the base of the plant. An egg puncture had been made, but for some reason did not prove satisfactory, and the mass was laid at the side of the puncture. She was hanging on the stem, head downwards, just below the egg mass, and for nearly one minute continued to probe the eggs with the genital plates until they were adhering to each other and to the plant. They were noticed to be quite "rubbery," indentations made by each thrust of the plates were quite deep, but the egg instantly regained its shape, no mark being left on the shell. Contrary to expectations the beetle did not inspect her completed work, but walked away without turning around. After a tour around the cage she ate nearly half a clover leaf and retired to seclusion. The elasticity of the egg was tested with a needle and found to be very great, fully equal to the strain of being pushed up a hollow petiole. In hundreds of eggs examined which were laid inside the petiole not a single egg was found to be broken.

October 10th. At 8.24 a.m. a female was observed making a puncture in the under side of a horizontal petiole. She reversed her position, inserting her ovipositor immediately, and in three minutes laid a single egg in the cavity. After withdrawing the ovipositor two minutes were spent in sealing the aperture. In an egg puncture no material is eaten out. A small hole is chiselled through and the opening made by bending back the little flap of tissue like a hinge. If

no egg is left in the opening this is all smoothed down and usually sealed tight with a glue-like secretion used on the eggs. The present instance, however, was the only one noted where no liquid was used in the operation. Whether due to the position of hanging under the petiole or not could not be seen. The plant was throughly examined but found to contain only three eggs. Feeling certain that all eggs for the day had not been laid the beetles were transferred to a more inviting plant. The female at once proceeded to make a puncture in a petiole one-half inch above the sheath. This operation took five minutes, then the position was reversed with head down. One egg was laid in three and one-half minutes. Very little movement of the body was noted in the process. After the egg had passed into the ovipositor it was forced out by pressure from the genital plates. When the ovipositor was withdrawn two eggs were on the surface laid in one and one-half minutes. The most remarkable feature of external oviposition is the drastic treatment given the egg mass after being laid on the outside of the plant. The genital plates are partially opened, to be used as a battering ram, the eggs being pounded about with such apparent carelessness, that it seems strange they are not all broken. A copious flow of liquid, and a rubbery pliant egg shell is all that saves them from destruction. This cementing process occupies two to three minutes, a little fluid being secreted at intervals on the eggs, and the plant surface where the eggs are to be fastened. This continual battering of the eggs finally forces them all together, and in close contact with the freshly glued stem surface. where they are fairly secure after the liquid dries. This beetle, which had been under close observation with the hand lens, rested a few moments, then made a puncture in the sheath of the same petiole, reversed her position and at once began to lay a mass. Twenty-four eggs were deposited in twenty-five minutes. The mass was well coated with fluid. The eggs were all introduced through the puncture in the same way, each egg pushing the one before it farther in.

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## THE SUNFLOWER MAGGOT (*Straussia longipennis* Wied.)

J. Eric Brink

The cultivated sunflower is coming to hold a very important place as a silage crop in Western Canada and in other regions where corn does not thrive. The utilization of this plant as a feed for dairy cows is economically important, not only for the reason that it is well adapted for soiling and silage purposes, but because it is suited to a wide variation of climatic and soil conditions. It is an exceptionally hardy plant, even resisting 5° or 6° of frost.

Corn has always been looked upon as the king of silage crops in sections where it is grown. But the European Corn Borer is proving to be a serious pest to the corn grower. The wave of the Chinch Bug northward in the great corn belt has made farmers in certain sections actually abandon its cultivation. So far the sunflower has been immune to the ravages of the European Corn Borer and also of the Chinch Bug.

From this one can readily see that the sunflower is gaining recognition as a silage crop. As the old saying is "There is a bug for everything," so the sunflower has its enemy in the sunflower maggot. The earliest record found in regard to this fly was in 1887, when it was discovered in the State of Maine ovipositing in sunflower stalks. Since then it has been recorded in California, Maine, New York, Alberta, and Ontario, showing that it is generally distributed

over the North American continent. Its host plant is almost entirely the sunflower, both cultivated and wild. It has however, been found attacking Jerusalem artichokes (*Helianthus tuberosus* L).

The sunflower fly is a true dipterous fly belonging to the family Trypetidæ. The general colour of the adult is yellow; a few black hairs on both the upper and lower surface of the thorax; legs medium length resembling the body in colour. The abdomen is a little narrower than the thorax, and is slightly darker in appearance, owing to the numerous black hairs that cover it. On an average the wings are seven m.m. long and three m.m. wide; the entire margin is armed with small black bristles. The banding of the wings resembles somewhat the letters "U F," as you may see from the specimens passed around.

The time at which the first flies emerge would depend somewhat on the temperature and moisture conditions. It would also vary in different localities. At Port Stanley this summer the first fly was found on the 29th of May. The maximum emergence was from June 3rd to June 14th; adults may, however, continue to emerge up to August. Of all the flies throughout the season approximately 60 per cent. were females. The average length of life of the flies is 21 days, although some lived in cages for a much longer time. It was very difficult to find out definitely the pre-oviposition period but it is believed to be about 13 days.

Before laying the female moves from plant to plant in a very nervous and restless manner until she finds a suitable spot. She then rises on her feet and inserts her sharp sting-like ovipositor by repeated thrusts. The whole operation requires from 30 to 40 seconds.

In 14 feet of wild sunflower stalk there were 53 punctures and only 31 eggs, showing that only 58.5 per cent. of the punctures contain eggs.

The egg is very small, semi-transparent, almost elliptical, and about three times as long as wide. It is perfectly smooth. The egg requires from five to six days to hatch.

The larva is cream coloured. The body consists of 13 segments and is stout, tapering gradually to the anterior end. It is from seven to eight m.m. long when full grown and 1.5 to 2 m.m. wide.

The injury is caused by the larvæ. They scratch the pith with two small black hooks, and then suck up the juice, soon causing the pith to turn brown or black. As the larvæ grow they work towards the ground, and by the end of the season in many stalks the whole of the pulp is eaten out, thus weakening the stalk and causing many to fall over. On September 27th fully 1,400 stalks were counted, and 10.4 per cent. of them had broken over. In many of the stalks a mold sets in where the pulp has been destroyed. We tried to have the infested stalks analysed to find the actual loss in food value. But the chemistry department said that they could not determine that.

Counts were also made of the seeds in the heads of the infested sunflowers. Approximately 50 per cent. of the seeds were empty. Counts were also made of the heads in uninfested stalks and 13 per cent. of the seeds were empty. This shows that 37 per cent. of the seeds fail to develop, directly due to this fly.

The maggots remain in the stalk from the time they hatch until the fall, when they leave the stalk, and enter the ground to pupate. This year they began to pupate the 8th of September, and all had left the stalks by the 21st of September. The larvæ near the base enter the ground right through the stalk, while others further up bore their way out wherever they are and drop to the ground.

No control measures have as yet been worked out. At the California Experimental Station attempts were made to control these flies with the hydrocarbons

and oil of citronella, but this was a complete failure. Since the adult flies have similar feeding habits to the cherry fruit flies, I believe that the same control could be used, *i.e.*, spraying with arsenate of lead. However, this is still to be tested.

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## NOTES ON THE SEED POTATO MAGGOT

(*Hylemyia trichodactyla* Rond.)

G. H. Hammond, Entomological Branch, Department of Agriculture, Ottawa.

There are few records of injury by the Seed Potato Maggot from North America, and, so far as can be determined, there are no records of injuries by this insect to turnips.

The following notes are now presented in reference to this crop as the result of some observations made during the past summer (1922) at Ottawa.

On August 2nd, a report was received by the Dominion Entomological Branch of severe root injury to turnips in a field near Ottawa. Investigation showed that the tap root of the plants was being cut through about the ground level. The injured surfaces were found to be rather evenly cut, the root being completely separated from the plant in many instances. In all the plants examined there was no evidence of direct tunneling into the turnips. On the date above mentioned the roots were approximately two inches in diameter and the injured seedlings were, in the majority of cases, already shrivelled and dying, and some which survived the initial injury were throwing out a lateral root system. In an acre fully 65 per cent. of the plants were attacked and approximately 50 per cent. of the plants were injured beyond hope of recovery. In many cases all of the plants in ten feet of row were destroyed. The injury was not localized, but was distributed generally throughout the field. The owner, Mr. W. F. Bell, stated that the injury had been noted for over a week and that the type of injury was new to him.

In an examination of the injured roots, puparia were found in the sandy soil two inches deep and within half-an-inch from the root. These puparia resembled those of the Cabbage Maggot (*H. brassicæ*), but were somewhat smaller. Some larvæ were also found feeding in the slight hollows on the upper portions of the main root at the ground level. These larvæ, on a superficial examination, resembled the Seed-corn Maggot (*Hylemyia cilicrura*).

Adults were reared in due course and they have been identified by Mr. H. C. Huckett, of the Agricultural Experiment Station, Geneva, N.Y., as *H. trichodactyla* Rond.

From an article by Johanssen in the Journal of Economic Entomology, Vol. XIV., December, 1921, this insect is recorded in Canada from Truro, N.S., and Sandford, Ont. In the Canadian National Collection of insects there are eleven specimens of *Hylemyia trichodactyla*, three collected by Mr. W. Metcalfe, at Brockville, dated September 13th and 20th, 1903; seven by the late Dr. James Fletcher, at Ottawa, dated August 25th, 1908, and one from Chateauguay Basin, dated August, 1910, probably collected by J. F. Jack. The specimens collected by Dr. Fletcher were taken off asters, according to information on the pinned specimens; it seems unlikely that they were reared from asters, but were probably taken from these plants in general collecting.

To these records we may now add those reared from turnips at Ottawa, which became adult on August 21st and 22nd, 1922, after a puparium stage of approximately seventeen days.

In Europe, reports of injury from this species apparently are common. Young cucumber vines, beans, asparagus and seed potatoes are recorded as being injured. In America the seed potato seems to be most commonly attacked, hence the name.

Johanssen, in the former reference, states that the species is "widely distributed," but reports of injury to crops are rare and very little is known of the life-history in America.

Females of *H. cilicrura* and *H. trichodactyla* are difficult to distinguish, but the males may be separated by the armature of the middle tarsus, which in the latter species has a few long bristly hairs on the upper (extensor) side of basal segment.

The larval characters, of which an account is given by Johanssen, show the close relationship of this species to *H. cilicrura*, *H. brassicæ* and *H. antiqua;* but from the structure of the mouth hooks *H. trichodactyla* is probably more closely allied to *H. brassicæ* than the others.

## THE ENTOMOLOGICAL RECORD, 1922

Norman Criddle and C. Howard Curran, Entomological Branch, Dominion Department of Agriculture, Ottawa

We regret that the records of rare captures available for the Entomological Record of 1922, are largely from collectors in the Dominion Government service; in other words, from professional rather than from amateur collectors. A few exceptions occur, however, more noticeably in Manitoba, and we have to particularly express our appreciation of Mr. J. B. Wallis, who has sent in a long list carefully arranged in order for inclusion in the Record.

As is well known, the Entomological Record was originated by the late Dr. James Fletcher largely to aid and encourage amateur collectors, and its maintainance has been mainly with that object in view. We hope, therefore, that the present number will prove useful in that respect. We would urge once again the necessity of sending in records in good time in order that we may have the manuscript in the printers' hands by the first of February.

It should be of general interest to Canadian collectors to know that the Systematic Staff of the Entomological Branch has now made sufficient headway in arranging the collections to be able to determine the species of several orders with accuracy. This is now true of Lepidoptera, Diptera, with some exceptions, Ephemeridæ, Odonata, Orthoptera and certain Coleoptera. We hope this fact will be taken advantage of by those who find difficulty in determining insect material.

There is still a great deal to be done by Canadian collectors before the many rich entomological fields have been adequately explored. Hundreds of new species await the collector and many others will have to be taken before an accurate idea of our insect fauna is available.

We wish once again to express our indebtedness to our fellow-workers in the United States and in Europe for assistance in determining species in various groups and for that courtesy which we believe is proverbial among Entomological workers.

There has been some overlapping in years due to publications not appearing on time. Several of the 1922 numbers have not been issued at this date.

## NOTES OF CAPTURES

Species preceded by an asterisk (*) described since the last Record was prepared.

### Lepidoptera

Pieridæ

63. *Eurymus interior* Scud. Algonquin Park, Ont., June 17, (J. McDunnough); Victoria Beach, Man., (G. S. Brooks).

Lycænidæ

430. *Plebeius sæpiolus* Bdv. Algonquin Park, Ont., June 17, (McDunnough).

432. *Plebeius yukona* Holl. Edmonton, Alta., July (D. Mackie).

Sphingidæ

749. *Amphion nessus* Cram. Victoria Beach, Man., May 24, (Brooks).

Arctiidæ

955. *Diacrisia vagans kasloa* Dyar. Lethbridge, Alta., (Seamans).

Noctuidæ

1097. *Rhodophora gauræ* A. & S. Lethbridge, Alta., (Seamans).
1191. *Schinia jaguarina* Gn. Lethbridge, Alta., (Seamans).
1215. *Copablepharon longipennis* Grt. Lethbridge, Alta., (Seamans).
1241. *Euxoa brevipennis* Sm. Lethbridge, Alta., (Seamans). New to Canada.
1272. *Euxoa detersa* Wlk. Lethbridge, Alta., (Seamans).
1273. *Euxoa intrita* form *strigilis* Grt. Edmonton, Alta., Aug., (D. Mackie).
1503. *Lycophotia nanalis* Grt. Lethbridge, Alta., (Seamans). New to Canada.

* *Xylotype arcadia* B. & B. Digby, N.S., Sept. 1907, (J. Russell). Barnes and Benjamin, Cont. Nat. Hist. Lep. N.A., Vol. V, No. 1, 1922.

* *Oncocnemis lepipoloides* McD. Lethbridge, Alta., Aug. 24, (H. L. Seamans).

* *Oncocnemis youngi* McD. Departure Bay, B.C., Aug., (C. H. Young).

* *Oncocnemis columbia* McD. Salmon Arm, B.C., July, (W. R. Buckell).

* *Trachea pluraloides* McD. Lethbridge, Alta., July, (Seamans).

* *Euplexia veresimilis* McD. Ottawa, Ont., (J. McDunnough).
The above five species described in Can. Ent., Vol. LIV, No. 10, 1922.

2160a. *Graptolitha tepida atincta* Sm. Edmonton, Alta., Aug., (Mackie).
2211. *Conistra signata* Frch. Lethbridge, Alta., (Seamans). New to Canada.

* *Escaria homogena* McD. Lethbridge, Alta., June 28, (W. Carter). Can. Ent., Vol. LIV, No. 10, 1922.

2586. *Acopa perpallida* Grt. Lethbridge, Alta., (Seamans). New to Canada.
2613 *Menopsimus caducus* Dyar. Edmonton and Nordegg, Alta., (Bowman).
2759. *Stiria rugifrons* Grt. Lethbridge, Alta., (Seamans). New to Canada.
2790. *Bellura diffusa* Grt. Edmonton, Alta., June, (R. Atcheson).
3012a. *Sarrothripus revayana lintnerana* Spey. Edmonton, Alta., July, (Mackie).
3055. *Catocala parta* Gn. Lethbridge, Alta., (Seamans).
3056. *Catocala luciana* Stkr. Lethbridge, Alta., (Seamans). New to Canada.
3094. *Catocala gracilis* Edw. Victoria Beach, Man., (Wallis aud Brooks); Malarche, Ont., (L. H. Roberts).
3013. *Catocala ultronia* Hbn. Rosebank, Man., (Davidson and Wallis); Victoria Beach, Man., Aug., (Brooks and Wallis).

* *Catocala orion* McD. Lethbridge, Alta., Aug. 31., (Seamans). Can. Ent., Vol. LIV, No. 12, 1922.

3333. *Syneda alleni* Grt. Victoria Beach, Man., June, (Brooks).
3562. *Bomolocha bijugalis* Wlk. Edmonton, Alta., July, (Mackie).
3571. *Bomolocha toreuta* Grt. Edmonton, Alta., July, (Atcheson).

Notodontidæ

* *Cerura occidentalis gigans* McD. Calgary, Alta., (Wolley Dod). Can. Ent., Vol. LIV, No. 6, 1922.

Drepanidæ

3758. *Oreta irrorata* Pack. St. Vital, Man., July (J. D. Suffield).
3760. *Drepana arcuata* form *geniculata* Grt. Victoria Beach, Man., Aug., (Wallis).

Geometridæ

* *Lygris lugubrata bowmani* Swt. and Cass. Cadomin, Alta., Aug., 1919, (Bowman).
Lepidopterist, Vol. III, No. 9, 1922.

* *Xanthorhoe aquilonaria* Swt. and Cass. Atlin, B.C., June, 1914.
* *Xanthorhoe incursata harveyata* Swt. and Cass. Vancouver, B.C., July, (R. V. Harvey).
These two species described in Lepidopterist, Vol. III, No. 8, 1922.
* *Xanthorhoe ramaria delectaria* Swt. and Cass. Atlin, B.C., June 28, 1914, (E. H. Blackmore).
Lepidopterist, Vol. III, No. 9, 1922.
4148. *Eupithecia obumbrata* Taylor. Edmonton, Alta., July, (Mackie).
* *Eupithecia nordeggensis* Swt. and Cass. Pocahontas, Alta., June, 1918, (Bowman).
* *Eupithecia stikineata* Swt. and Cass. Stikine, B.C., May, 1905, (Blackmore).
* *Eupithecia anataria* Swt. and Cass. Goldstream, B.C., Sept., (Blackmore).
The above described in Lepidopterist, Vol. III, 1922.
4486. *Nepytia canosaria* Wlk. Victoria Beach, Man., Aug., (Wallis).
4654. *Ellopia fiscellaria* Gn. Edmonton, Alta., Sept., (Atcheson).

Pyralidæ

5415. *Thaumatopsis pectinifer* Zell. Aweme, Man., Aug., (Criddle).
*Pyraustra ainsliei* Hein. Wawanesa, Man., (E. Criddle); in wild parsnip; Rockcliffe, Ont., (Young).
5585. *Glyptocera consobrinella* Zell. Aweme, Man., June, (Criddle).
* *Scoparia truncatalis* McD. Norway Point, Lake of Bays, Ont., July, (McDunnough).
* *Acrobasis alnella* McD. Ottawa; Ont., July, (McDunnough).
The above in Can. Ent., Vol. LIV., No. 2, 1922.

Gelechiidæ

6355. *Trichotaphe flavocostella* Clem. Aweme, Man., June, (Criddle).
6376. *Trichotaphe fernaldella* Busck. Aweme, Man., May, (Criddle).

Eucosmidæ

* *Exartema troglodanum* McD. Meach Lake, Que., June, (Young).
* *Exartema furfuranum* McD. Ottawa, Ont., June, (Young).
* *Exartema rusticanum* McD. Onah, Man., July, (Criddle).
* *Exartema fraternanum* McD. Ottawa, Ont., July, (Young).
* *Exartema terminanum* McD. Ottawa, Ont., July, (James Fletcher).
* *Argyroploce apateticana* McD. (*deceptana* McD.). Ottawa, Ont., July, (Young).
* *Argyroploce tertiana* McD. Ottawa, Ont., June 15, (Young).
* *Argyroploce buckellana* McD. Salmon Arm, B.C., May 28, (W. R. Buckell).
* *Argyroploce sordidana* McD. Nordegg, Alta., July, (McDunnough).
* *Argyroploce thallasana* McD. Aweme, Man., July, (Criddle).
* *Argyroploce aspasiana* McD. Mer Bleue, and Ottawa, Ont., July, (Young).
* *Argyroploce castorana* McD. Nordegg, Alta., July, (McDunnough).
* *Argyroploce polluxana* McD. Nordegg, Alta., July, (McDunnough).
* *Argyroploce carolana* McD. Ottawa, Ont., June, (Young).
* *Argyroploce vulgana* McD. Nordegg, Alta., July, (McDunnough).
* *Argyroploce nordeggana* McD. Nordegg, Alta., July, (McDunnough).
The above new species described in Can. Ent., Vol. LIV, No. 2, 1922.

6974. *Eucosma transmissana* Wlk. Aweme, Man., June, July, (Criddle).
7102. *Thiodia octopunctana* Wlshm. Tressbank, Man., July, (Criddle).
7203. *Ancylis tineana* Hbn. Aweme, Man., May 25, (Criddle).

Tortricidæ

7282. *Adoxophyes furcatana* Wals. Aweme, Man., June, (Criddle).
*Tortricodes horariana* Wals. Aweme, Man., Sept. 20, (Criddle).

## Coleoptera

(Arranged according to Leng's Catalogue of the Coleoptera of America North of Mexico—1920.)

Cicindelidæ

45. *Cicindela limbalis* Kl. Ft. Norman, N.W.T., Aug. 9, (C. H. Crickmay). Not quite typical.
45b. *Cicindela limbalis spreta* Lec. Ft. Wrigley, N.W.T., July 23, (Crickmay).
53. *Cicindela tranquebarica* Hbst. Ft. Norman, N.W.T., Aug., 14, (Crickmay).
59. *Cicindela longilabris* Say. Victoria Beach, Man., July-Aug., (Roberts, Brooks, Wallis).
* *Cicindela fulgida wallisi* Cald. Penticton, B.C., Aug. 13, 1909, (J. B. Wallis); Okanagan, B.C., Aug, 22, 1914, (Tom Wilson).
* *Cicindela fulgida westburnei* Cald. Westburne, Man., Aug. 14, (Wallis). The above two species described in Can. Ent., Vol. LIV, No. 3, 1922.

Carabidæ

* *Elaphrus chairivelli frosti* Hipps. Terrace, B.C., (W. W. Hippesley). Can. Ent., Vol. LIV, No. 3, 1922.
* *Dyschirius perversus* Fall. Miami, Man., (Wallis).
* *Dyschirius interior* Fall. Baldur, Man., June-July (Wallis and Criddle). Can. Ent., Vol. LIV, No. 8, 1922.
435. *Bembidion cheyennense* Csy. Baldur, Man., July, (Wallis, Davidson, Criddle).
590. *Bembidion dilatatum* Lec. Treesbank, Man., Aug. 7, (R. M. White).
* *Bembidion obtusidens* Fall. Baldur, Man., June-July, (Criddle, Vroom, Wallis, Roberts).
Can. Ent., Vol. LIV, No. 8.
603. *Bembidion salinarium* Csy. Baldur, Man., July, (Wallis, Criddle, Roberts, Robertson, White).
725. *Bembidion muscicola* Hayd. Aweme, Man., Aug. 29, (Criddle).
1575. *Platynus bembidoides* Kby. Aweme, Man., (Criddle).
1646. *Lebia atriceps* Lec. Lethbridge, Alta., May 26, (H. L. Seamans).
1712. *Calleida purpurea* Say. Kamloops, B.C., Apr. 20, (P. Vroom); Whitla, Alta., Sept. 10, 1922 (W. Carter).
1806. *Chlænius tomentosus* Say. Aweme, Man., Sept. 25, (E. Criddle).
1878. *Geopinus incrassatus*, Dej. Winnipeg, Man., June 23, (Wallis).

Dytiscidæ

2539. *Agabus seriatus* Fab. Aweme, Man., Sept. 20, (R. M. White).
* *Agabus sharpi* Fall. Winnipeg, Man., (Wallis); Grimsby, Ont., (Pettit).
* *Agabus triton* Fall. Edmonton, Alta., May 1917 (F. S. Carr); Winnipeg, Man., May 1911 (Wallis).

2547. *Agabus confertus* Lec. Mile 17, H.B. Ry., Man., July, 1917, (Wallis). Determined with some doubt by Prof. Fall.
2555. *Agabus bicolor* Kby. Mile 214, H.B. Ry., Man., July 1917, (Wallis).
2559. *Agabus inscriptus* Cr. Mile 332, H.B. Ry., Man.; Peachland, B.C., Aug., 1919 (Wallis).
* *Agabus canadensis* Fall. Aweme East and Winnipeg, Man., July and June, (Wallis).
* *Agabus ontarionsis* Fall. Makinak, Man., (Fanshaw); Belleville, Ont.
* *Agabus ajax* Fall. Waghorn, Alta.; Aweme East, Man., (Wallis and Roberts); West St. Modest, Labrador, (Sherman).
2560. *Agabus congener* Payk. Winnipeg, Man., (Wallis).
2562. *Agabus ambiguus* Say. Winnipeg, Man., April; Stonewall, July, Aweme East, July, (Wallis).
2563. *Agabus confinis* Gyll. Mile 214, H.B. Ry., Man., (Wallis).
2564. *Agabus discolor* Harr. Mile 332, H.B. Ry., Man.; Onah and Winnipeg, Man., July (Wallis).
2565. *Agabus lutosus* Lec. Peachland, B.C., Aug. 1919, (Wallis).
2566. *Agabus phœopterus* Kby. Winnipeg, Stonewall, Aweme East and Mile 332, H. R. Ry., Man., also Peachland, B.C., (Wallis).
2571. *Agabus infuscatus* Aube. Mile 332, H.B. Ry., Man., (Wallis).
2573. *Agabus morosus* Lec. Peachland, B.C., August 1919, (Wallis).
2575. *Agabus anthracinus* Mann. "Widely distributed in Man." (Wallis).
2576. *Agabus arcticus* Payk. Mile 214, H.B. Ry., Man., July, (Wallis).
* *Carrhydrus crassipes* Fall. Edmonton, Alta., June 14, 1916, (F. S. Carr).

The above genus has recently been revised by H. C. Fall—A Review of the North American Species of Agabus, John D. Sherman, Jr., publications—in which the above new species are described. Mr. Wallis has also made a special study of the group and we include these records on the joint authority.

2598. *Ilybius biguttulus* Germ. Thornhill, Man., July 1, 1916, (Wallis).

Gyrinidæ

2700. *Gyrinus analis* Say. Onah, Man., May 24, 1912, (Wallis).
* *Gyrinus latilimbus* Fall. British Columbia, (Keen); Searchmont, Ont.
2702. *Gyrinus opacus* Sahl. Mile 332, H.B. Ry., Man., July, (Wallis).
2706. *Gyrinus impressicollis* Kby. Mile 214, H.B. Ry., (Wallis).
2707a. *Gyrinus lagens* Lec. Mile 214, 332, H.B. Ry., Man., (Wallis).
* *Gyrinus befarius* Fall. Le Pas and Mile 332, H.B. Ry., Man., July, (Wallis); St. Dennis, Que. (Ouillet).
* *Gyrinus wallisi* Fall. Le Pas, Mile 214, 256, H.B. Ry., Man., July, 1917, (Wallis); Ontario (Evans).
* *Gyrinus lecontei* Fall. Toronto, Ont.
* *Gyrinus pleuralis* Fall. Lethbridge, Alta., (Wallis).

The above new species of Gyrinidæ are from Trans. Am. Ent. Soc., Vol. XLVII, No. 4, 1921.

Hydrophilidæ

2852. *Cymbiodyta lacustris* Lec. Stonewall, Man., May 25, 1919, (Wallis).
2875. *Cercyon ocellatus* Say. Miami, Man., June 17, (Wallis).

Staphylinidæ

4553. *Ontholestes capitatus* Blan. Aweme, Man., (R. M. White).

Corynetidæ

7696. *Phyllobæus dislocatus* Say. Aweme, Man., (E. Criddle).

Meloidæ

* *Macrobasis subglabra* Fall. Edmonton, Alta., (F. S. Carr). Can. Ent., Vol. LIV, No. 8, 1922.

Buprestidæ

9318. *Chalcophora angulicollis* Lec. Victoria Beach, Man., July, (B. and G. S. Brooks, L. H. Roberts).
9333. *Dicerca divaricata* Say. Aweme, Man., June 22. In Prunus, (Criddle).
9353. *Pœcilonota thureura* Say. Aweme, Man., July 1920, (Criddle).
* *Pœcilonota montanus* Chamb. Makinah, Man., (J. M. Swaine).
* *Pœcilonota fraseri* Chamb. Fraser River, B.C., (Weldt). The above two species described in the Jour. N.Y. Ent. Soc., Vol. XXX, No. 1, 1922.
9369. *Buprestis subornata* Lec. Faulkland, B.C., July 26, 1922, (P. Vroom).
9372a. *Buprestis nuttalli consularis* Gory. Victoria Beach, Man., (Wallis).
9373a. *Buprestis læviventris alternans* Lec. Victoria Beach, Man., July 9, (Wallis).
9513. *Agrilus ruficollis* Fab. Victoria Beach, Man., July, (Brooks, Roberts, Wallis). On raspberry.

Helmidæ

9615. *Helmis vittatus* Melsh. Treesbank, Man., July 6, (Criddle).
9618. *Helmis quadrinotatus* Say. Glen Souris, Man., July, Sept., (Criddle and White).

Tenebrionidæ

12008. *Embaphion muricatum* Say. Grassy Lake, Alta., (H. L. Seamans).

Bostrichidæ

12898. *Lichenophanes armiger* Lec. Treesbank, Man., (T. Criddle).

Scarabæidæ

13345. *Trox atrox* Lec. Lethbridge, Alta., June, (Seamans).
13654. *Dichelonyx testacea* Kby. Lethbridge, Alta., (Seamans).

Cerambycidæ

14384. *Acmæops subpilosa* Lec. Peachland, B.C., June 20, (W. Metcalf).
14391. *Acmæops longicornis* Kby. Peachland, B.C., June, (Metcalf).
14486. *Leptura plagifera* Lec. Peachland, B.C., July, (Wallis).
14518. *Leptura præstans* Csy. Peachland, B.C., July 22, (Wallis).
* *Leptura aspera parkeri* Hipps. Terrace, B.C., (W. W. Hippisley). Can. Ent., Vol. LIV, No. 3, 1922.
14984. *Leiopus cinerus* Lec. Aweme, Man., (Criddle and White).
15118. *Saperda imitans* Felt and J. Treesbank and Glen Souris, Man., (H. A. Robertson).

Chrysomelidæ

15305. *Exema gibba* Oliv. Aweme, Man., June 20, 1922, (R. M. White).

## Diptera

(Arranged according to "A Catalogue of North American Diptera" by J. M. Aldrich. The numbers refer to the pages of the catalogue.)

Tipulidæ

* *Chionea canadensis* Garrett. Cranbrook, B.C., Nov. 22, 1921, (Garrett). Proc. Ent. Soc. Wash., Vol. XXIV, Feb. 1922.

100. *Tipula apicalis* Lœw. Hemmingford, Que., (C. E. Petch).

101. *Tipula caloptera* Lœw. Hemmingford, Que., (C. E. Petch).

102. *Tipula fragila* Lœw. Hemmingford, Que., (C. E. Petch).

* *Alexandriaria suffusca* Garrett. Cranbrook, B.C., Oct. 9, 1920, (Garrett).

* *Alexandriaria intermedia* Garrett. Cranbrook, B.C., July 10, 1920, (Garrett).

* *Alexandriaria kootenensis* Garrett. Cranbrook, B.C., July 15, (Garrett). These three species described in Proc. Ent. Soc. Wash., Vol. XXIV, No. 2, Feb. 1922).

Mycetophilidæ

* *Macrocera trivittata* Johns. Farewell Creek, Sask., Aug. 1887, (Mrs. V. A. Armstrong).
Occ. Pap. Bost. Soc. Nat. Hist., Vol. V, p. 21, 1922.

Culicidæ

*Aedes nigromaculis* Lud. Aweme, Man., Aug., (Robertson and Criddle).

122. *Anopheles walkeri* Theo. Westbourne, Man., Aug. 24, 1922, (Robertson, Criddle).

Blepharoceridæ

* *Bibiocephala kelloggi* Garrett. Cranbrook, B.C., July 13, 1921, (Garrett).

* *Blepharocera canadensis* Garrett. Wilson Creek, B.C., 5,400 ft., Aug. 26, 1921, (Garrett).
These species described in Ins. Ins. Mens., Vol. X, No. 4-6, 1922.

Stratiomyidæ

179. *Sargus elegans* Lœw. Hastings Co., Ont., April, 1896, (Evans).

* *Stratiomyia discaloides* Curran. Chilcotin, B.C., June 4, 1920, June 10, 1920, (E. R. Buckell); Kelowna, B.C., July 2, 1914, (M. H. Ruhman).

* *Stratiomyia velutina* Curran. Aspen Grove, B.C., June 15, 1922, (P. N. Vroom); Lillooet, B.C., May 24, 1917, (A. W. Phair).
These two species described in Can. Ent., Vol. LIV, p. 279.

185. *Odontomyia hieroglyphica* Oliv. Orillia, Ont., May 30, 1920, (C. H. Curran).

186. *Odontomyia pilimana* Lœw. Ottawa and Trenton, Ont., (Jas. Fletcher), (Evans).

186. *Odontomyia hoodiana* Big. Banff, Alta., May, June, (C.B.D. Garrett).
*Odontomyia plebeja* Lœw. Belleville, Ont.

187. *Odontomyia varipes* Lœw. (*alberta* Curran). Banff, Alta., Aug., Sept., (Garrett and Sanson).

188. *Euparyphus quadrimaculata* Cresson. Banff, Alta., June 1, (C. B. D. Garrett).

Tabanidæ

196. *Chrysops fallax* O. S. Hemmingford, Que., (C. E. Petch).

* *Tabanus metabolus* McD. Nordegg, Alta., June 15, (McDunnough).

* *Tabanus laniferus* McD. Banff, Alta., July 24, (McDunnough).
These two species described in Can, Ent., Vol. LIV, No. 10, 1922.

Bombyliidæ

238. *Ploas obesula* Lœw. Nicola, B.C., May 25, (E. R. Buckell).
*Systœchus solitus* Walker. Lethbridge, Alta., July 9-13, 1921, (E. H. Strickland).

Asilidæ

259. *Dioctria nitida* Willist. Victoria, B.C., June, 1919, (P. N. Vroom).
259. *Cyrtopogon bimacula* Walk. Douglas, Man., June 10, 1921, (N. Criddle).
260. *Cyrtopogon leucozona* Lœw. Aspen Grove, B.C., June 28, (P. N. Vroom).
* *Cyrtopogon willistoni* Curran. British Columbia, various localities, and Banff, Alta.
* *Cyrtopogon albitarsis* Curran. Banff, Alta., July 17, 1916, (C. G. Hewitt); July 23, 1909, (N. B. Sanson).

Can. Ent., Vol. LIV, No. 12, 1922.

Dolichopodidæ

The following records of Dolichopodidae are based on material in the Canadian National Collection.

*Sciapus pilicornis* Ald. Vernon, B.C., July 16, 1920, (N. Cutler); Penticton, B. C., July 24, 1916, (R. C. Treherne). June 19, (W. B. Anderson).
*Sciapus flavipes* Ald. Glen Souris, Man., July 24, (H. A. Robertson).
293. *Nothosympycnus nodatus* Lœw. Aweme, Man., Sept. 4, (H. A. Robertson).
297. *Hydrophorus altivagus* Ald. Treesbank, Man., Aug. 29, (H. A.. Robertson); Lethbridge, Alta., July 20, (H. L. Seamans).
298. *Scellus monstrosus* O. S. Aweme, Man., June 26, 1920; Washoda, Man., Aug. 3, (H. A. Robertson).
*Dolichopus nigrimanus* V. D., C. & A., Banff, Alta, July 1, (C. B. D. Garrett); Aweme, Man., July 6, (H. A. Robertson); Ottawa, Ont., June 6, 1900.
303. *Dolichopus myosota* O. S. Royal Oak, B.C., July 31, 1917, (W. Downes).
*Dolichopus adæquatus* V. D., C. & A. Banff, Alta., June 1, (C. B. D. Garrett); Chilcotin, B.C., June 30, 1920, (E. R. Buckell).
303. *Dolichopus paluster* Mel. & Br. Banff, Alta., May 29, Aug. 4, (C. B. D. Garrett).
*Dolichopus manicula* V. D., C. & A. Banff, Alta., July 1, (C. B. D. Garrett).
*Dolichopus acuminatus* Lœw. Elkhorn, Man., Aug. 9, (N. Criddle).
* *Dolichopus albertensis* Curran. Banff, Alta., (C. B. D. Garrett).
* *Dolichopus vanduzeei* Curran. Banff, Alta., (C. B. D. Garrett).
* *Dolichopus diversipennis* Curran. Banff, Alta., (C. B. D. Garrett).
These three species were described in Can. Ent., LIV, No. 12, 1922.
*Dolichopus conspectus* V. D., C. & A. Chilcotin, B.C., June 3, (E. R. Buckell).
301. *Dolichopus gratus* Lœw. Banff, Alta., May 5, June 15, (C. B. D. Garrett).
305. *Dolichopus xanthocnemus* Lœw. Vernon, B.C., June 18, (N. S. Cutler), Ottawa, Ont., June 10 (G. Beaulieu); Trenton, Ont., June 30, 1902, (J. Evans).

*Dolichopus retinens* V. D., C. & A. Trenton, Ont., June 24, 1906, Port Hope, Ont., May 30, 1897.

*Dolichopus umbrosus* V. D., C. & A. Port Hope, Ont., June 13, 1897, (W. E. Metcalfe).

299. *Dolichopus apheles* Mel. & Br. Ogema, Sask., June 16, (N. Criddle).

*Dolichopus trisetosus* V. D., C. & A. Norway Pt., Lake of Bays, Ont., June 28, (J. McDunnough); Kentville, N.S., June 19, 1916.

*Dolichopus virga* Coq. Truro, N.S., July 11, 1913.

303. *Dolichopus pachycnemus* Lœw. Treesbank, Man., June 22, (H. A. Robertson); Hemmingford, Que., (Petch).

300. *Dolichopus brevipennis* Meig. Sask., June 30, 1917, (A. E. Cameron); Banff, Alta., June, July, (C. B. D. Garrett).

*Dolichopus brevimanus* Lœw. Cottage Beaulieu, Que., July 7, 1906, (Beaulieu); Ottawa, Ont., July 2, (Beaulieu); Winnipeg, Man., July 6, 1908, (J. B. Wallis).

*Dolichopus indigina* V. D., C. & A. Hull, Que., July 18, 1914, (J. I. Beaulne).

*Dolichopus canadensis* V. D., C. & A. Roberval, Que., July 28, 1915, (G. Beaulieu).

*Dolichopus defectus* V. D., C. & A. Roberval, Que., July 28, 1915, (G. Beaulieu).

*Dolichopus decorus* V. D., C. & A. Strathroy, Ont., June 10, (H. F. Hudson).

304. *Dolichopus setosus* Lœw. Truro, N.S., June 19, 1914.

304. *Dolichopus renidescens* Mel. & Br. Banff, Alta., May and Aug., (C. B. D. Garrett).

302. *Dolichopus marginatus* Ald. Youghall, N.B., July 7, 1908, (J. Fletcher); Algonquin Park, Ont., June 19-21, (J. McDunnough); Dauphin, Man., (Mrs. W. W. Hippisley).

304. *Dolichopus reflectus* Ald. Ft. Coulonge, Que., July 6, 1917, (J. I. Beaulne); Jordan, Ont., July 8, 1914, (W. A. Ross).

*Dolichopus albicoxa* Ald. Cottage Beaulieu, Que., June 19, (G. Beaulieu); Banff, Alta., Aug. 24, (C. B. D. Garrett).

*Dolichopus pilatus* V. D., C. & A. Banff, Alta., Aug. 23, (C. B. D. Garrett).

*Dolichopus porphyrops* V. D., C. & A. Truro, N.S., July 8, 1913; Robervale, Que., July 28, (G. Beaulieu); Algonquin Park, Ont., July 28, (J. McDunnough).

*Dolichopus pollex* O. S. Banff, Alta., July 7, (C. B. D. Garrett).

303. *Dolichopus obcordatus* Ald. Nordegg, Alta., July 5, 1921, (J. McDunnough); Banff, Alta., June, July, (C. B. D. Garrett).

303. *Dolichopus pernix* Mel. & Br. Banff, Alta., July 7, 30, (C. B. D. Garrett).

*Dolichopus blandus* V. D., C. & A. Ontario, June 9, 1900.

305. *Dolichopus vigilans* Ald. Youghall, N.B., July 7, 1908, (J. Fletcher).

301. *Dolichopus flagellitenens* Wheeler. Aylmer, Que., June 15, (C. B. Hutchings).

303. *Dolichopus pugil* Lœw. Youghall, N.B., July 6, 1908, (Jas. Fletcher); Hantsport, N.S., June 15, 1913, (H. G. Payne).

*Dolichopus uxorcula* V. D., C. & A. Banff, Alta., July 1, (C. B. D. Garrett).

301. *Dolichopus fulvipes* Lœw. Kentville, N.S., June 14, 1914; Aweme, Man., June 24, (H. A. Robertson); Banff, Alta., July 1, (C. B. D. Garrett).
*Dolichopus variabilis gracilis* Ald. Banff, Alta., July 1, (C. B. D, Garrett).

305. *Dolichopus wheeleri* Mel. & Br. Trenton, Ont., Aug. 17, 1902, (Evans); Aweme, Man., July 6, Baldur, Man., July 29, (H. A. Robertson); Maniwaska, Que., June 13, 1917, (Arthur Gibson).

302. *Dolichopus longimanus* Lœw. Meach Lake, Que., June 21, 1916, (Arthur Gibson).

305. *Dolichopus subciliatus* Lœw. Truro, N.S., July 8, 11, 1913; Algonquin Park, Ont., June 19-21, (J. McDunnough).

303. *Dolichopus nudus* Lœw. Banff, Alta., Aug. 16, 1922, (C. B. D. Garrett).
*Dolichopus speciosus* V. D., C. & A. Banff, Alta., July and Aug., abundant, (C. B. D. Garrett).
*Dolichopus procerus* V. D., C. & A. Cowley, Alta., June 16, 1918, (R. N. Chrystal); Banff, Alta., Aug. 27, (C. B. D. Garrett); Lethbridge, Alta., June 25, (W. Carter); Baldur, Man., July 29, (H. A. Robertson).
*Dolichopus completus* V. D., C. & A. Royal Oak, B.C., June 20, 1917, (W. Downes).
*Dolichopus æratus* V. D., C. & A. Banff, Alta., July 1, (C. B. D. Garrett).
*Dolichopus subflavus* V. D., C. & A. Banff, Alta., Aug. 21, (C. B. D. Garrett).

300. *Dolichopus coloradensis* Ald. Roberval, Que., July 28, 1915, (G. Beaulieu); Banff, Alta., June, August, (C. B. D. Garrett).
*Dolichopus omnivagus* V. D., C. & A. Banff, Alta., June 26, (C. B. D. Garrett).

300. *Dolichopus chrysostoma* Lœw. Kentville, N.S., June 24, 1914.
*Dolichopus slossonæ* V. D., C. & A. Roberval, Que., July 28, 1915. (G. Beaulieu).
*Dolichopus bakeri* Cole. Banff, Alta., June, July, (C. B. D. Garrett).
*Dolichopus domesticus* V. D., C. & A. Norway Point, Lake of Bays, Ont., July 28, 1919, (J. McDunnough).

301. *Dolichopus eudactylus* Lœw. Truro, N.S., July 11, 1913.
*Dolichopus versutus* V. D., C. & A. Lanoraie, Que., June 21, 1915, (G. Beaulieu).

301. *Dolichopus dakotensis* Ald. Aweme, Man., June 17, 1921, (P. Vroom).

299. *Dolichopus batillifer* Lœw. Truro, N.S., July 11, 1913.

305. *Dolichopus tener* Lœw. Trenton, Ont., Sept. 6, 1903, (Evans).
*Dolichopus sicarius* V. D., C. & A. Kentville, N.S., June 24, 1914.

304. *Dolichopus scopiarius* Lœw. Kentville, N.S., June 24, 1914.
*Dolichopus ainsliei* V. D., C. & A. Hull, Que., July 19, 1914, (J. I. Beaulne).
*Dolichopus frauditor distinctus* V. D., C. & A. Ottawa, Ont., July 12, 1919, (J. McDunnough).

305. *Dolichopus tenuipes* Ald. Saanich, B.C., June 22, Aug. 13, (W. Downes).

* *Dolichopus delicatus* Ald. Ungava Bay and Fort Chimo, Labrador, (Turner).
Proc. U.S.N.M., Vol. LXI, May, 1922.

* *Xiphandrium femoratum* Ald. Skagway, June 10, 1921, (Aldrich).
Trans. Am. Ent. Soc., Vol. XLVIII, No. 1, March, 1922.

Empididæ

310. *Phoneustica maculipennis* Walker. Ontario, Manitoba, Alberta, June to Aug.

*Drapetis armata* Melander. N.S., Ont., Man.

*Drapetis scissa* Melander. Chilcotin, B.C., May 7, (E. R. Buckell); Ogema, Man., June 16, (N. Criddle).

*Drapetis septentrionalis* Melander. Truro, N.S., Sept. 25, Belleville, Ont.

314. *Tachydromia winthemi* Zett. Nordegg, Alta., July 25, (J. McDunnough).

313. *Tachydromia brachialis* Mel. Ottawa, Ont., July 20, (Beaulieu).

314. *Hemerodromia albipes* Walker. Ottawa, Ont., June 9, 1904, (W. E. Metcalf.)

317. *Clinocera simplex* Lœw. Banff, Alta., Sept., (C. B. D. Garrett).

318. *Syneches thoracicus* Say. Brockville, Ont., Aug. 12, 1903, (W. E. Metcalf); Kingsmere, Que., July 18, 1919, (R. H. Chrystal).

320. *Brachystoma occidentalis* Mel. Saanich, B.C., June 22, 1918, (W. Downes).

327. *Hormopeza brevicornis* Lœw. Fort Wrigley, N.W.T., July 27, (C. H. Crickmay).

327. *Hormopeza bullata* Mel. Ottawa, Aug. 18, 1912, (Beaulieu).

327. *Hormopeza nigricans* Lœw. Banff, Alta., June-Sept., (C. B. D. Garrett); Cairncross, Y.T., July 28, 1919, (A. P. Hawes).

Syrphidæ

*Heryngia comutata* Curran. Victoria, B.C., May, 1916, (R. C. Treherne); Victoria, May 3, 1919, (W. B. Anderson).

*Heryngia canadensis* Curran. Ft. Coulonge, Que., July 6, 1917, (J. I. Beaulne).

*Heryngia californica* David. Victoria, B.C., May 3, 1919, (W. B. Anderson).

*Pipiza quadrimaculata* Panz. Banff, Alta., June 16, 24, (C. B. D. Garrett).

* *Pipiza atrata* Curran. Chilcotin, B.C., June 18, 1920, (Buckell).

* *Cnemodon nigricornis* Curran. Banff, Alta., June 15, 1922, (Garrett).
These two species described in Can. Ent., Vol. LIV, No. 12, 1922.

*Chilosia variabilis* Panz. Lillooet, B.C.

*Chilosia ferruginea* Lovett. Duncan, B.C., April 12, (W. B. Anderson).

*Chilosia nigrovittata* Lovett. Banff, Alta., May 5-June 9, (C. B. D. Garrett).

352. *Chilosia chalybescens* Willist. Agassiz, B.C., May 22, (R. Glendenning)

* *Chilosia hunteri* Curran. Teulon, Man., May 17, 1920, (A. J. Hunter).

* *Chilosia orilliaensis* Curran. Orillia, Ont., May, June, (Curran).

* *Chilosia robusta* Hine. (*columbiæ* Curran), Cranbrook, B.C., May 8, 1920, (Garrett).
This species described in Can. Ent., Vol. LIV, No. 1 and 3.

352. *Cartosyrphus lævis* Big. Banff, Alta., July 5, (C. B. D. Garrett).
* *Cartosyrphus ontario* Curran. Orillia, Ont., May 5, 1921, (Curran).
* *Cartosyrphus rita* Curran. MacDiarmid, Ont., June 7, 1921, (Bigelow).
* *Cartosyrphus sensuus* Curran. Orillia, Ont., May 5, 1921, (Curran).
Those species described as *Chilosia*, in Can. Ent., Vol. LIV, No. 1 and 3.
*Platychirus discimanus* Lœw. Aweme, Man., May 1, (R. M. White).
*Platychirus scutatus* Meig. Banff, Alta., June 2-29, (C. B. D. Garrett).
*Platychirus albimanus* Fabr. Vernon, B.C., May 11, 1920, (M. H. Ruhmann), Victoria, B.C., April 28, 1917, (A. E. Cameron).
*Platychirus podagratus* Fabr. Banff, Alta., May to July, (C. B. D. Garrett).
All the above are European species; some have been previously recorded from North America.
365. *Stenosyrphus contumax* O. S. Hopedale, Labrador, July, Aug.; Banff, Alta., June 2, July 17, (C. B. D. Garrett).
368. *Stenosyrphus sodalis* Willist. Banff, Alta., May 29, (C. B. D. Garrett); Chilcotin, B.C., July 29, (E. R. Buckell).
* *Syrphus grossulariæ* var. *melanis* Curr. Orillia, Ont., Sept. 18, 1921, (Curran).
Can. Ent. Vol. LIV, No. 4, 1922.
*Neoascia metallica* Will. Banff, Alta., May, June, (Garrett). Distinct from *globosa*.
376. *Brachyopa notata* O. S. Kentville, N.S., June 9, 1915.
* *Brachyopa perplexa* Curran. Orillia, Ont., June 2, 1921 (Curran).
Can. Ent., Vol. LIV, No. 5, 1922.
*Sericomyia bifasciata* Willist. Bathurst, N.B., June 15, (J. N. Knull); McDiarmid, Ont., (N. K. Bigelow); Lac la Peche, Que., June 30, 1919, (M. B. Dunn).
* *Cynorhina robusta* Curr. British Columbia.
* *Cynorhinella canadensis* Curr. Inverness, B.C., July, 1910, (Keen).
* *Mallota columbiæ* Curr. Penticton, B.C., June 5, 1919, (Treherne).
* *Mallota diversipennis* Curr. (Probably Canadian.)
These species described in Can. Ent., Vol. LIV, No. 1, 1922.
401. *Brachypalpus frontosus* Lœw. Bathurst, N.B., April to June, (J. N. Knull).
*Brachypalpus inarmatus* Hunter. (*apicaudus* Curran). Cranbrook, B.C., June 2, 1921, (Garrett).
400. *Xylota vecors* O. S. Aweme, Man., July 25, 1917, (N. Criddle).
398. *Xylota flavitibia* Lœw. Banff, Alta., July, Aug., (C. B. D. Garrett).
405. *Temnostoma obscura* Lœw. Montreal, Que., June 10, 1906; Ottawa, Ont., June 21, 1913, (J. I. Beaulne); Bathurst, N.B., July 27, (J. N. Knull), (*bombylans* of Ald. Cat.).
405. *Temnostoma trifasciata* Robertson. Ont., Quebec; May, June.

Helomyzidæ

* *Amœbaleria bisetata* Garr. Teulon, Man., May 31, 1920, (Hunter).
* *Anorastoma currani* Garr. Teulon, Man., Aug. 28, 1920, (Hunter).
* *Leria serrata* var. *nigricana* Garr. Cranbrook, B.C., June 6, 1921. (Garrett).
* *Leria serrata* var. *vinus* Garr. Cranbrook, B.C., Mar. 20 to April 8; Michel, B.C., Aug. 2, (Garrett).
Insec. Inscit. Mens., Vol. X, Pt. 10-12, Dec., 1922.

Scatophagidæ

* *Amaurosoma nuda* Mall. Cape Charles, Labrador, July 30, 1906. Bull. Brook. Ent. Soc., Vol. XVII, No. 3, 1922.

## Hymenoptera.

Ichneumonidæ

* *Phytodietus fumiferanæ* Roh. Lillooet, B.C., (A. B. Baird), Can. Ent., Vol. LIV, No. 7, 1922.

Braconidæ

* *Rogas hyphantriæ* Gah. Fredericton, N.B., Sept., 1917, (A. G. Dustan).

* *Micropletus stigmaticus* Gah. Vancouver, B.C.

* *Microgaster canadensis* Gah. Canada, (C. F. Baker).

* *Apanteles olenides* Museb. Vernon, B.C., (E. P. Venables).

The above four species described in Proc. U.S. Nat. Mus., Vol. LXI, 1922.

## Hemiptera.

(Arranged according to "A Check List of the Hemiptera (excepting the Aphididæ, Aleurodidæ and Coccidæ) of America North of Mexico," by E. P. Van Duzee).

Miridæ

* *Labops hirtus* Kgt. Chilcotin, B.C., (E. R. Buckell); Edmonton, Alta., (Carr); Parry Sound, Ont., (H. S. Parish); and Strathroy, Ont., (H. G. Crawford).

* *Labops tumidiformis* Kgt. Chilcotin, B.C., June 15, 1920, (R. C. Treherne).

The above two species described in Can, Ent., Vol. LIV, No. 11, 1922.

## Neuroptera.

Perlidæ

* *Kathroperla perdita* Banks. Kaslo, B.C., (Taylor).

Sialidæ

* *Sialis rotunda* Banks. Bon Accord, B.C., May, (J. Russell).

Raphididæ

* *Raphidia bifurca* Banks. Wellington, B.C., (Taylor).

Limnephilidæ

* *Limnephilus adustus* Banks. Banff, Alta., Aug., (N. Sanson).

* *Limnephilus kennicotti* Banks. Great Stone Lake, N.W.T., (Robert Kennicott).

* *Limnephilus elongatus* Banks. Fort Resolution, N.W.T., (Kennicott).

* *Homophylox crotchi* Banks. Vancouver Island, B.C., (G. R. Crotch).

The above species were described in Bull. Mus. Comp. Zool., Harvard, Vol. LXIV, No. 3, 1920.

## Orthoptera.

Prepared by E. R. Buckell.

**Tryxalinæ**

*Pseudopomala brachyptera* Scudd. Vernon, B.C., (E. R. Buckell).

*Amphitornus nanus* R. & H. Chilcotin, B.C., July, 1920, (E. R. Buckell). New to Canada.

*Orphulella salina* Scudd. Fairview, B.C., Aug. 7, 1919, (E. R. Buckell). Previously recorded as *O. pelidna*, Ent. Rec. 1919.

*Ageneotettix occidentalis* Brun. Southern Okanagan Valley, B.C., 1919, (E. R. Buckell). New to Canada.

*Mecostethus lineatus* Scudd. Chilcotin, B.C., Aug., 1920, (E. R. Buckell).

*Mecostethus gracilis* Scudd. Chilcotin, B.C., Aug., 1921, (E. R. Buckell).

*Chorthippus oregonensis* Scudd. Penticton and Chilcotin, B.C., 1920, (E. R. Buckell). New to Canada.

**Oedipodinæ**

*Pardalophora apiculata* Harris. Chilcotin, B.C., June, 1920, (E. R. Buckell).

*Xanthippus leprosus* Saussure. Chilcotin, 1920, (E. R. Buckell). New to Canada.

*Metator nevadensis* Bruner. Osoyoos, 1919; Chilcotin, 1920-21, (E. R. Buckell). New to Canada.

*Mestobregma kiowa* Scudd. Okanagan Landing, B.C., 1919, (E. R. Buckell).

*Trimerotropis ferruginea* McNeill. Vernon, B.C., 1919; Chilcotin, B.C., 1920-21, (E. R. Buckell). New to Canada.

**Locustinæ**

*Asemoplus montanus* Bruner. Rockcreek, B.C., 1922, (E. R. Buckell).

* *Bradynotes chilcotinæ* Hebard. Chilcotin, B.C., June 7th, 1920, (E. R. Buckell).
Trans. Am. Ent. Soc., Vol. XLVIII, 1922, No. 821.

*Bradynotes pinguis* Scudd. Rockcreek, B.C., Aug., 1922, (E. R. Buckell). New to Canada.

*Melanoplus flabellifer* Scudd. Chilcotin, B.C., 1921, (E. R. Buckell).

*Melanoplus flavidus* Scudd. Aweme, Man., Aug. 23, 1922, (R. M. White). New to Canada.

*Melanoplus confusus* Scudd. Chilcotin, B.C., 1920, (E. R. Buckell).

*Melanoplus washingtonianus* Bruner. Nicola, B.C., 1922, (E. R. Buckell).

**Tettigoniidæ**

*Neoconocephalus triops* Linn. Cote St. Paul, Montreal, Que., July 22, 1900, (G. Beaulieu).

*Stenopelmatus fuscus* Haldeman. Fairview, B.C., 1919, (E. R. Buckell). New to Canada.

*Ceuthophilus agassizii* Scudd. Chilcotin, B.C., 1921, (E. R. Buckell).

*Pristoceuthophilus celatus* Scudd. Vernon, B.C., 1919, (E. R. Buckell).

*Steiroxys trilineata* Thomas. Chilcotin, B.C., 1920, (E. R. Buckell)

*Apote notabilis* Scudd. Fairview, B.C., 1922, (E. R. Buckell).

## Thysanoptera

Thripidæ

*Sericothrips standordi* Moult. Victoria, B. C., May, 1918, (R. C. Treherne).

*Sericothrips variabilis* Beach. Lillooet, B.C., 1917, (Treherne).

*Parthenothrips dracœnæ* Heeger. Vancouver, B.C., (J. W. Eastham).

*Tæniothrips albus* Moult. Kelowna, B.C., 1917, (Treherne).

*Tæniothrips pallipennis* Uzel. Lillooet, B.C., June; Treesbank, Man., May, (Treherne).

Phlœothripidæ

*Haplothrips verbasci* Osb. Vineland, Ont., (W. A. Ross).

*Haplothrips faurei* Hood. Beamsville, Ont., 1918, (W. A. Ross).

## Collembola

* *Achorutes nothus* MacN. Arnprior, Ont., April, (MacNamara).

* *Achorutes pannosus* MacN. Monteith, Ont., (J. D. Allen).

The above two species described in Can. Ent., Vol. LIV, No. 7 1922.

# INDEX


| | PAGE |
|---|---|
| *Agrilus politus* | 43 |
| " *ruficollis* | 43 |
| *Agrotis c. nigrum* | 37 |
| *Alsophila pometaria* | 34 |
| *Ancylis comptana* | 46 |
| *Anthonomus signatus* | 36 |
| *Anthrenus scrophulariae* | 39 |
| *Aphidophagus* | 32 |
| *Aphis gossypi* | 36 |
| " *mali* | 46 |
| " *pomi* | 33 |
| Apple aphids | 34 |
| " maggot | 33 |
| " tent caterpillar | 46 |
| *Aspidiotus perniciosus* | 35 |
| *Autographa brassicae* | 36 |
| Blackberry leaf miner | 35 |
| Black cherry aphis | 34 |
| *Blissus leucopterus* | 38 |
| Bud moth | 34 |
| Buffalo carpet beetle | 39 |
| *Bryobia pratensis* | 39 |
| *Byturus unicolor* | 35 |
| Cabbage looper | 36 |
| " maggot | 36, 74 |
| *Cacoecia rosaceana* | 46 |
| *Calandra cryzae* | 39 |
| *Calosoma* | 10 |
| *Camnula pellucida* | 37 |
| Canker worms | 34 |
| *Carabus memoralis* | 10 |
| *Carpocapsa pomonella* | 33, 46 |
| Caterpillar hunters | 10 |
| Cherry fruit-flies | 34 |
| Chinch bug | 38 |
| Cicada | 38 |
| Cigar case-bearer | 34 |
| Clover leaf beetle | 70 |
| " mite | 39 |
| Codling moth | 33 |
| Coiled rose worm | 37 |
| *Coleophora fletcherella* | 34 |
| " *malivorella* | 34 |
| Colorado potato beetle | 37 |
| Common garden ant | 18 |
| *Conotrachelus nenuphar* | 35, 46 |
| Corn borer, European | 10, 13, 18, 37 |
| " ear worm | 37 |
| Cutworm, spotted | 37 |
| *Datana ministra* | 46 |
| *Diabrotica vittata* | 36, 46 |
| *Diastrophus cuscutaeformis* O.S. | 10 |
| " *fragariae* Beutm. | 10 |
| " *turgidus* Bass | 10 |
| *Diphadnus appendiculatus* | 35 |
| *Emphyctus cinctipes* | 37 |
| *Empoa rosae* | 34 |
| *Empoasca mali* | 34, 37 |
| *Epitrix cucumeris* | 37, 46 |
| *Eriocampoides limacina* | 35 |
| *Eriophyes pyri* | 35 |

| | PAGE |
|---|---|
| *Erythroneura comes* Say | 48 |
| " " *octonotata* | 57 |
| " " *vitis* | 57 |
| " " *ziczac* | 57 |
| " " *tricincta* | 57 |
| " *vulnerata* | 57 |
| *Exartema permundanum* | 36 |
| *Exorista nigripalpis* Towns. | 19 |
| Feather mite | 47 |
| Flea beetles | 37 |
| Forest tent caterpillar | 46 |
| *Frankliniella californica* Moulton | 39 |
| " *occidentalis* Pergande | 39 |
| " *tritici* Fitch | 39 |
| Fruit-tree leaf-roller | 33 |
| Gooseberry fruit worm | 36 |
| " saw-fly | 35 |
| Grasshoppers | 37 |
| Green apple bug | 34 |
| Green peach aphis | 34 |
| Ground beetle | 10 |
| Heel fly | 39 |
| *Heliothis obsoleta* | 37, 46 |
| *Hemerocampa leucostigma* | 35, 46 |
| Hickory plant bug | 34 |
| *Hylemyia antiqua* | 36 |
| " *brassicae* | 74 |
| " *cilicrura* | 74 |
| " *trichodactyla* Rond. | 74 |
| *Hypera punctata* | 70 |
| *Hypoderma bovis* | 39 |
| Imported cabbage worm | 36 |
| Indian meal worm | 39 |
| Lady-bird beetle, 12-spotted | 23 |
| *Lasius niger* Linn. var. *americanus* | 18 |
| Leaf bugs | 34 |
| Leaf-hopper, apple | 34 |
| " grape | 35, 48 |
| " potato | 37 |
| *Leptinotarsa decemlineata* | 37, 46 |
| *Liponyssus bursa* | 47 |
| *Lixus concavus* | 36 |
| Long-tailed maggot | 32 |
| *Lygus caryae* | 34 |
| " *communis* | 34 |
| *Lygidea mendax* | 34 |
| *Lygus omnivagus* | 34 |
| " *pratensis* | 34 |
| " *quercalbae* | 34 |
| *Macrobasis unicolor* | 46 |
| *Macrodactylus subspinosus* | 35 |
| *Malacosma americana* | 46 |
| " *disstria* | 46 |
| *Megilla maculata* | 23 |
| Melon aphis | 36 |
| *Metallus bethunei* | 35 |
| *Miridae* | 34 |
| *Mompha stellella* Busck | 10 |
| Monarch butterflies | 10 |
| *Monomorium pharaonis* | 39 |
| *Monophadnus rubi* | 35 |

| | Page |
|---|---|
| Mosquitoes | 39 |
| *Myzus cerasi* | 34 |
| " *persicae* | 34 |
| Oak plant bug | 34 |
| *Okanagana canadensis* | 38 |
| Onion maggot | 36 |
| " thrip | 36 |
| *Otiorrhynchus ovatus* L. | 61 |
| *Paleacrita vernata* | 34 |
| *Paratetranychus pilosus* | 35 |
| *Paria canella* | 36 |
| Pear blister mite | 35 |
| " and cherry slug | 35 |
| " psylla | 35 |
| Pharaoh's ant | 39 |
| *Phorbia brassicae* | 36 |
| *Pieris rapae* | 36, 46 |
| Pistol case-bearer | 34 |
| Plant bugs | 34 |
| *Plodia interpunctella* | 39 |
| Plum curculio | 35 |
| " mite | 35 |
| *Psylla pyricola* | 35 |
| *Pteronus ribesii* | 46 |
| *Pyrausta nubilalis* | 37 |
| Raspberry byturus | 35 |
| " leaf-roller | 36 |
| " saw-fly | 35 |
| Red bug | 34 |
| *Rhagoletis cingulata* | 34 |
| " *fausta* | 34 |
| " *pomonella* | 33 |
| Rhubarb curculio | 36 |
| Rice weevil | 39 |
| Roadside grasshopper | 37 |
| Rose chafer | 35, 64 |
| San Jose scale | 35 |
| Saw-toothed grain beetle | 39 |
| *Schizura concinna* | 46 |
| Seed-corn maggot | 74 |
| Seed-potato maggot | 74 |
| Short-tailed maggot | 32 |
| *Silvanus surmamensis* | 39 |
| *Straussia longipennis* Wied | 72 |
| Strawberry leaf beetle | 36 |
| " petiole gall | 10 |
| " root weevil | 61 |
| " weevil | 36 |
| Striped cucumber beetle | 36 |
| Sunflower maggot | 72 |
| Syrphidae | 30 |
| *Syrphus americanus* | 33 |
| " " *pomus* | 32 |
| " " *vinelandii* | 33 |
| Tachinid fly | 19 |
| Tarnished plant bug | 37 |
| Tent caterpillars | 46 |
| Thrips tabaci | 36 |
| *Tmetocera ocellana* | 34, 46 |
| *Tortrix* (*Cacoecia*) *argysrospila* | 33 |
| *Volucella fasciata* Macq | 32 |
| White-marked tussock-moth | 35 |
| *Zophodia grossulariae* | 36 |

Ontario Department of Agriculture

# FORTY-THIRD ANNUAL REPORT

OF THE

# BEEKEEPERS' ASSOCIATION

OF THE

# PROVINCE OF ONTARIO

# 1922

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
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1923

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LIMITED
TORONTO
CANADA

To His Honour Henry Cockshutt, Esquire,

*Lieutenant-Governor of the Province of Ontario.*

May it Please Your Honour:

I have the honour to present herewith for your consideration the Forty-third Annual Report of the Ontario Beekeepers' Association for 1922.

Manning W. Doherty,

*Minister of Agriculture.*

Department of Agriculture,

Toronto, 1923.

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*Honey Crop Committee*—Messrs. Wm. Couse, H. G. Sibbald, Wm. A. Weir and Wm. J. Craig.
*Canadian National Exhibition*—Mr. Wm. Couse.
*Royal Winter Fair*—Messrs. Sibbald, Agar and the President.
*London Exhibition*—Mr. E. T. Bainard.

## FINANCIAL STATEMENT.

*Receipts.*

| | |
|---|---|
| Balance on hand, 1921 | $680 54 |
| Membership fees ($1.50) | 1,175 40 |
| Membership fees (75c.) | 376 53 |
| Queen order receipts | 3,007 96 |
| Ontario Government Grant | 1,000 00 |
| Affiliated Society fees | 160 00 |
| Honey sold at C. N. Exhibition | 3,239 72 |
| Containers and bee supplies | 72,595 63 |
| Packages and nuclei | 12,500 72 |
| Sundries | 92 85 |
| | $94,829 35 |

*Expenditures.*

| | |
|---|---|
| Nuclei and packages | $11,426 21 |
| Bee supplies | 7,238 44 |
| Queen payments | 2,324 57 |
| Containers | 63,866 78 |
| Honey bought and expenses at C. N. Exhibition | 3,428 78 |
| Refunds on containers, queens and bee supplies | 2,096 35 |
| Committee and convention expense | 769 66 |
| Postage and printing | 846 01 |
| Subscriptions to *Beekeeper* | 1,094 59 |
| Grants to county societies | 110 80 |
| Fees to county societies | 402 82 |
| Office help | 561 80 |
| Sundries | 245 70 |
| Balance on hand | 416 84 |
| | $94,829 35 |

E. T. Bainard,
*President.*

F. Eric Millen,
*Secretary-Treasurer.*

# Ontario Beekeepers' Association

The Forty-second Annual Convention of the Ontario Beekeepers' Association was held in the Empire Room of the Prince George Hotel, Toronto, on Wednesday, Thursday and Friday, the 6th, 7th and 8th days of December, 1922.

The President, Mr. E. T. Bainard, occupied the chair at all sessions. The attendance was large, and the discussions highly interesting as well as profitable.

The large number of members gathered for the opening session, being called to order, rose at the request of the President and opened the session by singing "God Save the King."

## PRESIDENT'S ADDRESS.

E. T. Bainard, Lambeth.

In meeting together once more in our Annual Convention, we are reminded that time passes rapidly; and, on looking back, the past year seems to have been very short; yet, after all, our Association has done the largest amount of business in its history.

The most important business of all was the buying of containers at a reduced price, saving the members thousands of dollars.

The bees wintered well and came out in good condition in the spring, and in some cases quite a quantity of surplus early dark honey was gathered.

Clover conditions were good with plenty of rain in most sections. In some localities cool weather followed after each rain, reducing the flow from white and alsike clover. However, sweet clover did not seem to be affected by cool weather and yielded exceptionally well.

When the committee met to consider the white honey crop, reports received showed an average of only three pounds per colony more than the previous year's report, and some good sales had already been made at a good price. This influenced the committee to recommend last year's prices, but some of the smaller beekeepers were anxious to sell early and rushed honey on the local market, which was already overloaded with fruit. Some of this honey was mixed fruit bloom and clover and sold at a low price, which paralysed the market for any kind of honey, because buyers will not buy any great quantity on a declining market.

Some honey producers make a very serious mistake of overestimating their crop, and underestimating its value. Proclaiming from the housetop that we have a big crop of honey is a first-class way of lowering the price, and buyers are quick to take advantage of these reports.

Did we make a mistake when we imported two cars of bees to produce more honey to compete in the open market and taking a chance of importing more disease with them? Are we making a mistake in allowing carloads of

cheap honey to be imported for manufacturing purposes, and our own second grade honies go begging a market?

Co-operative buying of supplies has been a success this season, but can we make co-operative selling of honey a success? Instead of handling a few cars of supplies, we will have to market 200 or 300 cars of honey, all guaranteed of a certain grade.

The day has come when the production of honey will be seriously checked, unless a more uniform and progressive system of grading and marketing is agreed upon and developed.

One of our Bee Journals made the statement: "Would it not be a wise move to 'lay off' for a while on the effort to teach beekeepers how to produce more honey, and for a year or two endeavour to discover some way in which the commercial beekeepers can dispose of their crops of honey to a profitable advantage to themselves?"

Our Department of Agriculture has for a number of years been working along the line of greater production and very little attention given to marketing of honey. The time has come when this policy could be reversed and more attention given to marketing and less to production.

We are pleased to know the Hon. Manning W. Doherty, our present Minister of Agriculture, is an advocate of co-operative marketing. This will meet with the approval of a great many of our members, especially with the larger producers who depend on honey alone for a living.

It will be our duty to give some of our time to the discussion of the foul brood situation. This disease is certainly on the increase and some more drastic measure will have to be taken to prevent the enormous waste each year caused by American foul brood. Lack of funds for inspection work is the principal reason, but could the $4,000 or $6,000 granted by the Department of Agriculture for a Queen Rearing Apiary have been used to better advantage for foul brood inspection work? A resolution was put through last year asking the Ontario Government to pass legislation making it compulsory for all persons keeping bees to register each year with the Department of Agriculture. This was not brought up at the House for lack of pressure behind it. This legislation could be put through and a small revenue realized from it, if so desired. The resolution as drafted last year is as follows:—

> "That, whereas the spread of foul brood among bees is on the increase, and, that the greatest danger is from those having a small number of colonies kept in a careless, indifferent way, and the moving of them from place to place, all of which makes it very difficult for the inspector to locate all the disease in that particular district.
>
> "We, therefore, would ask the Ontario Beekeepers' Association now assembled to take some definite action by having a clause added to the Provincial Foul Brood Act, making it compulsory for all persons having bees in their possession to register each year with the Department of Agriculture."

Our Association has at all times made good use of every opportunity of advertising and bringing honey before the public. Good exhibits were made at the Canadian National Exhibition and the Royal Winter Fair, at Toronto, and also individual exhibits were sent to the London Dairy Show, London, England, where several prizes were won.

The work of this Association is increasing in value and its influence is gaining more and more each year; and if this Association is to continue to grow and hold its place among other organizations it will be necessary for us to carefully select experienced men of good, sound judgment to represent us and carry on the work of this Association.

## FIRST VICE-PRESIDENT'S ADDRESS.

JOHN MYERS, STRATFORD.

Once more we have met in our Annual Convention. Once more we have met to have social intercourse and good fellowship, as well as to learn and give to others what we have learned, also what experiences we have gained during another year, while being engaged in our glorious pursuit.

To most of us, perhaps, the year has been one of greater hopes as well as disappointments. Of course, we hoped for a good crop and also for fair prices. In the former we were fairly successful; in the latter we were somewhat disappointed. Higher prices having been obtainable the past few years, it seemed disappointing to have the price drop so low as it is at present. I am of the opinion that if more beekeepers would practise better business methods and not be so afraid of the other fellow, we would not have to sell at prices below cost of production.

I do not know how it was all over the country, but in our district it just seemed as though one beekeeper was afraid another beekeeper would get ahead of him, and they just rushed their product onto the market and were willing to take lower prices. Even after our Association said we would take a certain price, which our Committee set, some beekeepers thought that they had a big crop and put it on the market and took lower prices, thus tending to spoil the market for all of us. And, according to what I have heard since I came to this meeting, I think there has been something of that kind done all over the Province. Too much afraid that the other fellow will get ahead of us!

So far as we know, European foul brood has not appeared in our district, although while engaged in doing some inspection work, I found in quite a number of colonies dead brood, but it did not turn brown or ropy and was quite scattered through the hives. Not having seen any European foul brood, I am not quite sure if this was the European or something which came from some other source. American foul brood we have, but I am pleased to say that in the districts that I have inspected it is not as prevalent as I had expected to find it; and I think that with diligent inspection it can be at least kept in control, if not completely eradicated. I am sorry that it cannot be made possible—for lack of funds—for the Inspector to be around when treatment is being conducted, many being so careless about the disinfecting of implements and things used in manipulating diseased colonies, also the methods used in disposing of the refuse obtained from burning the combs and bees. I believe all refuse should be buried and buried deeply.

MR. MYERS: I would like to ask the Secretary if he is well satisfied with the business that was conducted during the season in regard to the bees which were imported into the country?

MR. MILLEN: From what we have learned this year, we feel that imported package bees or nuclei, to be successful in Ontario, must reach here at the beginning of fruit bloom and dandelion flow. Besides that, it would pay the members, if they get bees in carload lots, to get them to come in by express rather than by freight to their destination and then reship by express. We found the cost was almost as great when coming by freight as it would have been if sent by express. We have full reports from some of the members who received the package bees. There are quite a number of safeguards which any one who gets package bees ought to secure from the shipper, to be sure that he gets what he wants.

We found that unless the nuclei came here in cool weather, practically all the brood disappeared. In the second carload, which had the three days of warm weather *en route*, practically all the brood was heated and dead, practically useless. In suitable, cool weather, the brood is all right; but it almost entirely disappears in very hot weather.

MR. KROUSE: I believe it is heat that kills the brood. Twelve years ago, when I found that same condition in the colonies, the weather was very hot for three or four days right along. Then this year when we found it in the nuclei, it was the same thing; and I wondered if the heat had anything to do with the dead brood in the colonies.

MR. HOLTERMANN: Were these nuclei Italian bees?

MR. MILLEN: Yes.

MR. HOLTERMANN: Black bees would ship better. I believe the decision not to ship in carload lots again is a wise one. I have had three-frame nuclei and the sealed brood was alive and satisfactory. The unsealed they will soon destroy after they are confined. If you get black bees with an Italian queen, those bees will ship better than Italian bees. For my part, I prefer buying them in the nuclei form.

MR. MILLEN: The only objection I would take to Mr. Holtermann's remarks is that if you get black bees, you can take it for granted that they come from beekeepers who are not up-to-date, and therefore there would be more chance that they would come to us with disease. And, again, the beekeeper who is shipping the black bees has to buy his Italian queens. In many cases the shippers do that, any way. If the bees are yellow, we feel pretty sure that the queens are properly mated. If we get black bees, we will be pretty sure that we will get hybrid queens, if they were raised in the same locality.

MR. AGAR, who went down South to get the second carload, said: The second carload of bees which came from the South, our Secretary has said, were eight days on the road. Some of those bees were actually ten days from the time they were in their packages until they were taken out; while they were not actually that long on the road, they were ten days from the time they were put into the box until they were opened up. I got some, and mine were ten days.

The first three days out on the car, the temperature was between 85° and 90°, and at our first divisional point we were run in on a siding and the engine taken off, and we were left there for two and a half hours with the refuse from a creosote factory running along the ditch past the car, and with the smoke we were enduring I thought if those bees got through you could not kill bees. On the first of May, they were cutting wheat and their oats were ripe down there. We here would consider ourselves very foolish to ship a carload of bees any distance in midsummer. While we were down there, our boxes for nuclei were made up, three frames to a nucleus. We left a space at the side for a frame, and the bees drew out the foundation and the queens laid eggs, and I thought they were going to be that much ahead. When we got here, all the young brood was killed. To be sure the bees would have enough to feed their larvæ, I fed them two or three times a day on the way up, and still it did not save them.

MR. HOWE, of New York State: Did you water the bees while on the way?

MR. AGAR: I did not actually water the bees, any more than keeping the car well sprinkled.

MR. HOWE: I have bought bees in Texas, nuclei. Bro. Holtermann and I seldom agree when an argument comes up; but, knowing bees as I do, I know that Italians will ship better than blacks.

MR. AGAR: When it is between 85° and 90°, how much water can you actually put into those bees?

MR. HOWE: They should be sprayed on the wire and given what they would take.

MR. HOLTERMANN: Mr. President, I have shipped several carloads of bees from the South, and I have always made provision for watering the bees; and if they get a little more than they require it does not do a particle of harm. But, since you have decided not to do that any more, there will not be much profit in further discussing the matter. I learned many years ago from an old beekeeper that when the Italian bees got excited for any length of time they will sting one another to death; and from my experience, I unhesitatingly say black bees will ship better than Italian.

HECTOR INCH: I think the subject of package bees has been pretty well covered and there is not much more that I can say. All the parcels I bought from the South have come up by parcel post. I never accompanied them. I have always found that when there were black bees in the packages they seemed to build up a little faster when they first got here than the Italians did, and there seemed to be fewer dead bees in the bottom of the packages.

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## REPORT OF THE SECRETARY-TREASURER.

Moved by W. W. WEBSTER, seconded by F. W. KROUSE, that the report of the Secretary-Treasurer be received and adopted. Carried.

Moved by MR. MYERS, and seconded by MR. HOLMES, that we tender our Secretary-Treasurer a very hearty vote of thanks. I think a nice way to do it would be by a standing vote. Carried.

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## RESOLUTIONS COMMITTEE.

MR. MORLEY PETTIT, as Chairman, MR. HOLMES and MR. MCKINNON were appointed a Resolutions Committee.

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## APIARY INSPECTION.

JAMES ARMSTRONG, SIMCOE.

Disease inspection has been on the programme of our Conventions right along, and yet we do not seem to be making the progress we should toward the elimination of contagious bee diseases. No matter what method has been adopted in expending the funds available for this purpose we have been forced to the decision that we cannot hope to carry on bee disease inspection effectively until we get more money.

The method of carrying out inspection work during the past season has been different from that employed during the preceding seasons. Men recom-

mended by the local Beekeepers' Associations were appointed: two men to each county or section of county, and the older, experienced inspectors led the work. The plan was to spread the work over the whole Province, in contrast to the previous plan of working in a limited area. The number of inspectors under this plan was necessarily large and the amount of time each inspector could spend in his territory was very short, too short to be at all effective. With plenty of funds available, the plan has its good points, but under the limited funds we have had it must be admitted that the results do not show up.

Inspection methods and disease treatment methods require more serious attention in Ontario now than in the past. The increasing area where European and American foul brood exist side by side, often in the same colony, demands a quick, positive diagnosis with the microscope. Even our most experienced inspectors require the assistance of a bacteriologist at times; to say nothing of the average beekeeper, whom an inspector may not reach for a year or two under present conditions. We have a first-class man and friend in Prof. Davey at the Ontario Agricultural College, but he has more work than he can do during the inspection season.

One of the great weaknesses of our present system of appointments is that our inspectors do not get on the ground early enough in the spring. Inspection should begin as soon as the bees start to work in the spring, for I know that is the very time to do good work. At that time there are not so many bees in the hives, and the combs are not crowded with honey, and there can be more work done in less time. I know there were three weeks lost last spring of the very best weather for inspection due entirely to the delay in the appointment of inspectors which is done from year to year usually late in the spring. We cannot inspect too early in the spring. I do not think we will have satisfaction until we secure the permanent appointment of sufficient skilled inspectors and experimenters to cover Ontario thoroughly and help every beekeeper in trouble from foul brood.

Methods of treating foul brood are being put before the beekeeping public very rapidly. Most of them are dangerous, and I think it is of the highest importance that all such methods should be tested and given the word of approval or condemned. We must advocate methods which in the hands of the average beekeeper will succeed. I might say that I know some big beekeepers think that American foul brood cannot be cured, but I know that it can be cured, for I have cured it myself. If there are optional methods, which with average care are successful, let them be known; but in our efforts to educate the *average* beekeeper, with the average skill and the average accommodation, let us exercise care to advocate a sure method. The control as to which sure method shall be used should be a matter for the inspector's judgment, who can take all of the local conditions into consideration. Before closing, I would like to ask, How many have tried the use of one dry comb and full sheets of foundation treatment, and how many succeeded?

I would like to move that a committee of two or three beekeepers be appointed by this Convention to interview the Minister of Agriculture again this year and see if we cannot get a larger grant to carry on the very necessary work of inspection in the way that I have suggested.

THE PRESIDENT: This paper is of very vital interest to us all. We are pleased to have with us to-day Mr. Gooderham, Dominion Apiarist, of Ottawa, who will lead in the discussion.

MR. GOODERHAM: I think we have all listened with a good deal of interest to this paper on Apiary Inspection, by Mr. Armstrong, the Chief Apiary In-

spector for this Province. Mr. Armstrong has touched on most of the subjects which might arise in apiary inspection. Diseases of bees are the most serious things which can occur in an apiary, that is, they are the most serious problem which the beekeeper has to face, and more money should be allowed for this work than for any other work that is carried on in the apiary, especially from the Government.

A case was brought to my attention this summer, of an apiarist whose apiary was inspected and who was given instructions how to treat, and the beekeeper politely told the inspector that he did not know how to treat and that he would not treat. So, if that Inspector had to carry out the Act, he should treat that apiary or have it treated by some one who is capable. That man who would not treat his own apiary should be made to pay for the inspector's time. On the other hand, take the large beekeepers, who understand disease and may know the treatment better than the inspector himself. Those men, of course, should not be charged when no work is done in their yards. It is only in the cases where the inspectors have to do the work themselves, and I think those beekeepers should be made to pay for that work.

In Nova Scotia, I had charge of the inspection work for a couple of years, and found the trouble to be that most of the amateurs were afraid of the disease and afraid of the inspector, and therefore would not report the disease. Others, who were conscientious and were anxious to have the disease cleaned up, would report to the inspector or to the office and we would communicate with the inspector. But some would not report; and I was told that one apiarist informed the inspector that he had American foul brood in his yard, and had had it for years. The men to whom he had sold bees, of course, had the disease. There should be a thorough inspection all over the Province. Beekeepers should be made to register, in some way, without taxation. I am not dealing with taxation here; but the beekeepers should be made to register so that the inspector of any county is able to locate any colony of bees in the Province, and he should have enough time allowed to examine them all thoroughly. He then, in that year, gets a knowledge of where the disease is; and the second year he can concentrate on the areas where there is disease, and, by overlooking the treatment, he is more likely to get the disease cleaned up.

The disease question is an old topic, and I am doubtful whether, after all the years of talking on the disease question, we are much further advanced than we were at the beginning. The disease seems to be spreading, and new outbreaks are occurring. Probably there are some areas which have been cleaned up; but I do not think that the method for treating the disease is altogether adequate. I think more drastic measures should be taken, in cases where the apiarist knows that he has disease and will not treat his apiary, and the inspector has not time to treat. These places are sources of infection, sources of danger, to other yards. The inspector should be backed up by the law, and should burn the infected colonies of such a beekeeper lock, stock and barrel, because in ninety-nine cases out of one hundred, if he leaves it to the apiarist, the latter is going to try to save the maximum number of bees and his equipment, and he will also save foul brood.

Mr. Armstrong also dwelt upon the idea that there is a need of a bacteriologist. There is a bacteriologist at Guelph, and I know he is willing to diagnose all samples sent in. In Ottawa, we also do such work. Although it is not such a laboratory as at Guelph, yet we are willing at any time to diagnose samples of diseased brood, and we try to be as prompt as possible. Every day's delay is dangerous, if it is American foul brood, and the beekeeper wants to get busy

and clean it up. As a rule no other organism is found with the American foul brood organism. With the European foul brood, on the other hand, it will be found different; they will show the same symptoms as may be seen in American foul brood; that is, the larva will die and turn brown; sometimes die after it is capped over, and it will be of the same consistence, ropy, but not quite as ropy as American foul brood. But in American foul brood the position of the larva is consistent. With European foul brood the brood generally dies before it is capped over, and takes unusual positions in the cells.

Mr. Armstrong also said that the inspector should be on the job early in the spring. This is quite correct, because, as Mr. Armstrong pointed out, there are fewer bees to contend with in the hive, and it is a better time to do the work, and the bees have good time to build up before the honey-flow. Bees treated early will often put in a good surplus; but if put off until midsummer, the crop from that colony is lost.

You can get a better examination of the combs, from having fewer bees on them, and time is valuable. Robbing in the spring of colonies which have the disease and are weak and likely to be robbed by other bees and should be looked after as early as possible and before robbing commences.

Regarding the treatment, Mr. Armstrong remarks that there are many methods which are dangerous. They certainly are, in the hands of an amateur. In the hands of a man who understands American foul brood and knows how easily it is distributed and who will take every precaution, some of them may be all right; but in case the amateur started treating his bees by some of these methods which are given out, he would make a mess of it and likely cause a spread of the disease instead of eradicating it. The only treatment, if an amateur wishes to clean up and cannot get an inspector to do it, would be to pile his hives in a heap and burn them completely; not do as one man said here to-day, dig a hole about a spade deep, and after the burning leave the remains so that the bees may come there and gather up the honey, and so distribute the disease. Everything should be burned, and burned completely.

Mr. Agar: I would like to see a system which would cover the whole Province for three years, and I think we would do a whole lot toward eradicating the disease. The system fell down this last year because we had inexperienced men on the job with nobody to start them off. When I was around at the conventions, I told those men that some one would be along to give them a hand on the first day or so; but nobody came. The trouble was lack of money. If you take a cupful of water and spread it all over the floor of a room, it is soon gone. The money being spread all over the Province is soon gone, and we have no result except that a few more beekeepers understand the disease a little more thoroughly than they did.

Mr. R. G. Houghton: Foul brood and the methods to adopt to contend with it and stop its ravages in the Province is an important question. People seem shy, sometimes, about admitting that they have foul brood, and like to keep it quiet. They should not do that, for the sake of their beekeeping neighbours. When it gets abroad that somebody is trying to keep something secret, that is the time they get in wrong. The beekeepers about Wyebridge, after my first visit, formed an Association, and sent together for their queens, foundation, and other supplies. About two months after they had treated their bees they sent for me to come back. I wondered what was wrong but thought it would be a case of some beekeeper who was a little obstinate and that they required assistance with him. It did not happen to be that, but they were so delighted with the job that they had done in cleaning up their yards that they

wanted us to see it; and I never looked into a hive of an apiary with nicer bees than I did in the yards of Mr. Blair and some of the others at Wyebridge. When we went in there first, they were all black bees. When we revisited them two months afterwards they were as nice leather-coloured bees as you would like to see.

Last year, I had the pleasure of giving an address on Apiary Inspection, and I advocated better honey houses; and I am going to keep at it until I see better honey houses in my part of the country, at any rate. Inspectors, when they go from place to place and advocate certain treatment, know that it will fail because they see the honey houses with openings through which you could put your finger, or comb is exposed while being carried from the honey house into the cellar. No system can be successful against such drawbacks. It is a pleasure to go into a neighbourhood and find nice little honey houses which will keep out bees. There should be on the honey house a lock, and it should be kept locked. The best precautions can be spoiled in half an hour if the honey house door is left ajar. Sometimes people will leave old combs in the honey house until they find a convenient time to melt down. I believe that from poor honey houses arise many of the failures in the treatment you adopt.

Another important thing is that inspectors should be sent into the field early, at least in fruit bloom. I have two or three apiaries and also have other work to do. Calls were made upon me to go and inspect bees but I was not appointed and I did not know who would be appointed, so could not go. Then when the appointment came, I considered that I should not accept it; and if it had not been that I knew the work was badly needed, as there had been no inspection for many years, I would not have gone out. How much would it mean to you experienced beekeepers if you did not know the disease? Consider the loss which would come to a beekeeper, who did not know the disease, with 110 or 115 colonies, if about the middle of June an inspector comes along, tells him he has disease and must clean up. If the inspector had gone in there during fruit bloom and had found disease and treated the colonies affected, so that they could be got into shape, the beekeeper would have a full crop. Difficulty will be found in getting inspectors to go out in June. Busy beekeepers are not going to neglect their own work for the benefit of other people; not many of them are millionaires, and able to afford the time.

MR. HOLTERMANN: When foul brood attacks a colony it will very soon be extinct, and no one need look for surplus honey from diseased bees. Foul brood is a disease which has wings, and is worse than hog cholera, as far as infection is concerned. If a diseased colony dies out, the disease is taken home to healthy colonies, and in that way is very rapidly distributed.

MR. HOLMES: This discussion on Mr. Armstrong's very valuable paper has under consideration a topic which is of very great interest. I move: "That this Ontario Beekeepers' Association in convention assembled memorialize the Ontario Government to take steps which shall contemplate a more thorough dealing with the matter of the disease of foul brood amongst bees; and that a committee be named at this convention who shall carry this prayer and petition of this Association to the Honourable the Minister of Agriculture in his Department, that the Government provide adequate ways and means for this purpose throughout the Province of Ontario, among beekeepers and in their interests."

Mr. J. O. Moore seconded the motion.

MR. KROUSE: I consider that our whole trouble is that we send out inspectors to hunt the disease, and then we quit. We find it but then do not do anything more; and I agree with Mr. Holtermann that it is only a joke if we do no more

than find the disease and stop at that. When an inspector finds a colony which he knows will not do any good and will not produce honey, it should be up to him to burn it up. What is the good of treating it? It is not the strong colonies which have just a cell or two. I think the inspector should be given instructions to destroy all colonies which will not be strong enough to gather honey. Then we will get results.

MR. JAMES ARMSTRONG: We have now instructions to destroy every colony that we think cannot be treated. I do not hold myself up as being any better than anybody else on this job, but I have destroyed a great number of colonies of bees before I have left the yard and have got into a good deal of trouble. I always knew, and Mr. Chrysler knew when he was on the job as an inspector, that you could commence your work, but you could not finish it; and that is the trouble all along the line. That is the reason why I suggested the $30,000 of a grant for this year.

I remember when we first went out on the job, that we would frequently get into trouble with some beekeeper who felt like telling us to get out on the road, that he knew more about bees than I did. Perhaps he did. I never dispute any point with a beekeeper when I am on his place. I am there only to do my work. To-day I do not know a county in the Province in which I have been where you could not pick out a very good man for inspector; and when I started you could not get more than one or two in the whole Province. It is well known that at one time there was only one man and he was supposed to cover the whole Province; and that is where the trouble commenced. I am not finding fault with Mr. McEvoy, who was the one man; but it was an utter impossibility, as you have heard stated to-day, to cover the ground. This year there may have been sixty or seventy inspectors, but they did not get started until the proper time to do the work was gone by.

MR. J. L. BYER: I think all are agreed that more money is needed. Twice I have been on a deputation to the Minister of Agriculture, and I am convinced that until we have something more convincing than in the past, any resolution presented will be useless. We must have some way of proving to the Minister that we are in earnest and that the money asked for is needed. They seem to be looking upon this industry as a joke, but I believe if the Minister was convinced that money is really needed, he would give us an increased grant. I have thought that if the county associations would get into touch with their local member and make themselves solid with him, many of our difficulties would disappear. If the Minister knew that there would be no challenge to the vote, I believe we would get whatever was necessary. Every grant recommended by a Minister comes under very close supervision and examination by the Opposition. And it is well that that is so. Therefore, I suggested that the county associations bring in a resolution, and take it up with their member, and let their member become interested; and you will get whatever grant is required from the Provincial Legislature.

MR. MILLEN: I believe two of the members who have discussed this subject have touched near the heart of things which perhaps some of us may not have noticed sufficiently. Mr. Houghton showed that although disease might be present in a territory, if the beekeepers have sufficient interest to get together, without any Government aid, they can eradicate it. Mr. Byer is right when he considers that the Minister did not think we had presented a sufficiently strong case for an increased grant. The Government will always give money for a cause that the public will sufficiently support. I do not believe that the beekeepers have ever been back of this movement against disease sufficiently.

Even if the Government gave us $100,000 or $150,000, I do not believe we could get rid of foul brood unless the beekeepers make up their minds that they must get rid of it. Mr. Houghton has given us one instance to-day where beekeepers came together and realized that if they did not work together they would be wiped out.

The average beekeeper is not qualified to treat his diseased colonies, because, in many cases, he has not had sufficient experience with disease to know what care is required. One thorough treatment by a body of beekeepers banded together would eradicate disease entirely. If we had a hundred men out for three months in the year, unless they actually treat the colonies, I do not think we would get much further ahead. It is up to the beekeepers to keep up their interest every day in the year. I do not blame any Government for not giving us more money until more of the beekeepers make more noise, and show the Government that we will attempt to do our part.

MR. CHRYSLER: I do not intend to convey the idea that we do not need more money, but why should we ask for more money until we can convince the Government that we have something that will eradicate the disease and put ourselves in a better position than we have been in in the past? At present, we are not all agreed as to the cure, and as to the manner of cure, and as to the number of inspections, and the time of inspection, and things like that. I am thoroughly convinced that if we had a less number of inspectors employed the whole season through we would have better results than with sixteen or even sixty inspectors, as we probably have had this year. But our plans are not ripe, and we should submit some plan that we know will be workable and feasible, and that has been proved; and we will get any assistance from any Government that we show we can do something.

MR. BYER: Mr. Armstrong asked the question as to the success inspectors or beekeepers found in leaving one dry comb in the hive in the treatment of foul brood. I do not know how Mr. Armstrong has found it; but in the little inspection I have been doing, one man came to me and said: "That does not cure it at all; I tried it last year and we have foul brood this year." But I found that the difficulty was that they left the comb in too long. If you put the comb in the hive in the evening, when you are treating the colonies, and take it out the next morning, the thing will be successful; but, if you leave it in and take it out the next night, it probably will not be successful because the bees will start storing that honey elsewhere; but if you take it out the first morning, the bees probably will not have started storing honey excepting in that comb. If you do not take it away the next morning, you will be in danger of spreading the foul brood.

MR. ARMSTRONG: It is not very long since we started to try this out. With me, the difficulty was that, perhaps, I would be with the beekeeper in the evening and help him out with his colony of bees, and he would do the job well enough, and I would leave to him the taking out of the comb. As Mr. Myers says, it is important that that drawn comb be taken out in the morning; and when you are going to take it out, you do not want to smoke your bees if you can avoid it. If you have a quilt on top of the hive, you can roll it back so as to let you get at the particular frame, and you do not leave all your frames bare. I take the precaution of marking on the top of the hive just where that comb is placed. If you leave it until the next day you probably will have forgotten and will have to disturb the colony; and at once you start to strip the cover off and give them a little smoke they start to gorge themselves with honey, with the result which you all know. Just lift the cover and take out that comb and

brush the bees off as quickly as possible before any of them start to take out honey. The trouble often is that they forget to take the comb out, and then, when they look they see that the comb is full of honey and think that it is too bad to take it out. By treating the colony by the dry frame method, you save three or four days of the bees' time. I have seen them build half-inch starters down to the bottom in three or four days; this means quite a loss. If we can treat our bees and not have them lose time, by putting in full sheets of foundation and one drawn comb, and replace that drawn comb with a sheet of foundation, we save time.

MR. CHRYSLER: Mr. Armstrong has touched upon something of importance. In what position in the hive does he put that drawn comb, at one side, in the centre, or where?

MR. ARMSTRONG: At the one side, so that we can get at it more easily. Sometimes, if the bees are not working very lively, there will not be many bees on it. Occasionally I have taken out that comb without a solitary bit of honey in it.

MR. CHRYSLER: I would like to state an instance which happened this year. One of our inspectors treated a colony of bees, and he put one drawn comb in the centre; the others were all foundation. I happened to have occasion, twenty-four hours afterwards, to go to that colony, and, on the right-hand side of that hive, standing from the back, the foundation was drawn out and honey in it, and not a particle of honey in the drawn comb. I will venture to say, from my experience, that in shaking colonies of bees into a hive it will be found in ninety-nine out of one hundred cases they will start working on the right-hand side of the hive. That is where that drawn comb of foundation was; and in every instance combs put into the centre have never been occupied by the bees. The instance which I have just referred to happened this year, and would have been a failure in the curing of foul brood.

MR. ARMSTRONG: Was it old comb, or comb which had been filled out that year, or had it had brood in, or was it a thoroughly clean comb?

MR. CHRYSLER: It was thoroughly dry comb, which had been well cleaned out. I have noticed that colonies of bees take to the right-hand side of the hive.

THE PRESIDENT: The Committee will be appointed later.

The next item on the programme is "Comb Honey Production," by Mr. George S. Demuth, editor of "Gleanings in Bee Culture," of Medina, Ohio.

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## COMB HONEY PRODUCTION.

GEORGE S. DEMUTH, MEDINA, OHIO.

I want to congratulate you on your numbers at this convention. I have attended beekeepers' meetings in all of the States, except one or two, and in Canada, and it seems to me this beats them all. An intelligent effort and proper information will go a long way toward eradicating foul brood among intelligent beekeepers, and from the look of things you have both. Go to it.

This is a region of extracted honey production, and one of the first things I learned is that when you visit any of your neighbours the proper thing is to talk their baby and how nice it is, and not to talk about your baby and how nice it is. Now I have come to Ontario, and I am asked to talk about comb

honey production, when extracted honey production is your baby, while comb honey production is my baby. You may get a few things for your extracted honey production in what I may have to say about comb honey production, because the two things are very much alike after all, and not two different worlds as some may think.

Away back in 1876 the comb honey era was ushered in by the invention of comb foundation, and along in about 1885 comb honey production was in its prime, and it kept on increasing until extracted honey production came and took its place, along in 1906, when the present era of extracted honey production began. Now, you ask me to tell in one talk what beekeepers learned in all those years between 1876 and 1906, and I cannot do it. Shall I talk about apparatus in honey production? Shall I talk about the restraining of swarming in comb honey production? Any one of many such subjects would take up more time than is at our disposal this afternoon.

Ontario quit producing comb honey several years ago. I observe on the programme, just above our present topic, the words "The Demand Exceeds the Supply." Now that is not so over the line. Over there the supply exceeds the demand. If that is true in Ontario, the extracted honey producer had better keep on producing extracted honey. If the printer turned this around, (I do not know whether he did or not) then it may be well for some to consider the production of comb honey to go along with extracted honey. When Ontario did quit producing comb honey she went a little too far, because comb honey helps to sell extracted honey. Comb honey is a thing which does not compete with extracted honey, but helps in its sale, and I am always glad to see comb honey on the market because it always carries with it the sale of some extracted honey.

Why did Ontario beekeepers stop producing comb honey? It was because about that time men began to have the vision of beekeeping as a business, and went into it on a larger scale, and they began to expand and increase their apiaries. They learned to control in a sufficient degree the swarming. If you talk to a man who is producing extracted honey, he says he has not the market for comb honey. Most of those who changed over, back in 1906, and took up extracted honey production, and have expanded their business, have a conception of comb honey which is out of all proportion. That is to say, the extracted honey production has forged ahead so fast in the last few years, so much has been learned about it, and these men have gone so far in the new phase of production that they look back astonished to where they were some years ago. I have talked to some men who say it is impossible to control bee swarming in comb honey production, whereas we know some men are producing comb honey by the ton. I am not standing up here to-day to defend comb honey production. Ever since I took charge of the editorial work on "Gleanings in Bee Culture," I have been trying to swing myself over to the viewpoint of the producer of extracted honey, because he is in the majority. I have been trying to subordinate that thing which was uppermost in my mind, that is, comb honey production. Those who quit comb honey production eight to twelve years ago and went over to extracted honey production, as I said a little while ago, have a wrong conception I think of the problem of comb honey production to-day. They think of it as being a very slow, tedious and tiresome work which requires a lot of attention to details which they get rid of in extracted honey production. If I had a lot of time at my disposal I could talk of swarm control, but I have not the time. I am going to run through a few

things in regard to comb honey production, and then allow you to ask questions if you wish to do so.

The yield of a colony in comb honey production is said to be one half of that of extracted honey production. That is given as about the ratio. I know that a great many of you did produce comb honey some years ago, because a great deal that I know I learned from men who wrote for bee journals years ago. A great many beekeepers who know are now too busy to write for the bee journals. The yield is not two to one in extracted honey production if properly managed. The yield is somewhere in the neighbourhood of as many sections of comb honey as pounds of extracted honey. In other words, the yield is somewhere in the neighbourhood of seventy-five pounds of comb honey to one hundred pounds of extracted honey—that is, in a region adapted to comb honey production and under good management. In regions not well adapted the rule of one to two may be about right, and was poor management.

Where one man is operating a series of apiaries for comb honey production he does not want too many apiaries in the east, unless he has lots of men. Over in the States—I don't know how it is here—the yield per colony of comb honey, counted in dollars, is usually much greater than the yield in dollars when extracted honey is produced. I do not know how it would be in Ontario. And yet we go on producing extracted honey.

Where should comb honey be produced? Comb honey should be produced where conditions or honey flow and quality of honey make it possible to produce a fancy article. One of the worst things is comb honey which is not a fancy article, because the thing itself depends upon its appearance.

Where is the honey of the right quality to go into comb honey? Where is the honey flow of the right character to go into comb honey? Let us examine the conditions throughout the United States and Canada briefly as to honey flow and quality of honey.

Some thousands of years ago—geologically speaking not very long ago—nature began to build a comb honey region. The way nature built this comb honey region was, first, to make a great inland sea of shallow water and put into this inland sea many sea animals and coral, and they began building up a great bed of lime—limestone it came to be. The next step in the process of making a great comb honey region was the lifting up of this sea and making the sea bottom on the level of the land.

The next step in the process of making this great comb honey region was that of plowing and cultivating, not with horses or tractor, but with great ice sheets which came down and mixed up the soil and the lime; the glaciers have plowed up and cultivated a great area. This cultivation was done not only in Canada, but the ice sheets were somewhat impartial and pushed down across what is the border line. They disregarded customs officials and went over the line and plowed down in Vermont and in New York state where Mr. Howe lives. I saw there the lines which were plowed; and it mixed up the lime with the soil; and it pushed down into Western Ohio, and into Indiana, and much of Wisconsin and of Minnesota. Then the winds came and picked up this soil and scattered it into Ohio. So was made the great sweet clover region. Sweet clover is going to be produced in the Montana Valley; that is the great sweet clover region in this hemisphere.

Now the best plowing and cultivating was done in a region not very far from here. The great alsike region is largely a Canadian region. We have a little of it in the United States, but not very far down. That, ladies and gentlemen, is the comb honey region.

Farther west, in the great irrigated sections, they have lime in the soil also. It takes lime to make clover, and it takes clover to make clover honey. They have lime farther west, but they lack water. Nature pushed up great mountains which stand up and gather snows of winter, and in summer the moisture comes down the great irrigation ditches. There is the alfalfa honey, which granulates readily, but which they have been putting into comb honey; and they send alfalfa comb honey from Idaho, Colorado, from Washington and Wyoming, into the very heart of the sweet clover region in the east, and they sell this early granulating alfalfa honey in the form of comb, and we are extracting our honey and selling it in the form of extracted honey. I did not intend to go into this to any extent, but it seems that we have the great clover honey region of the Northern Hemisphere and are buying our comb honey from the West.

I would not advise any extracted honey producer to go back to the production of comb honey, but there should be some comb honey to go on the market to help to advertise our product.

Not only are we producing goods that have a value, but in producing it we help the farmer who furnished the flowers, by the pollenation of his plants; and, furthermore, when a carload of honey is gathered together and sent off to the city to be sold there is nothing taken from the soil and transported to the city. Nearly all other products you take from the soil and sell to the city, you are taking from the land and selling to the city. In the case of honey, there is practically nothing taken from the soil when the honey is produced and transported for sale. Honey is made out of—shall I tell—(I do not know whether there are newspaper reporters here or not)—water and carbon. The carbon is taken out of the water, and the water comes from the clouds; and we take nothing out of the soil when we are selling a crop of honey. That is a talking point for the beekeepers.

Now, just a few words about the mistakes which are made in the comb honey area, and that will help to explain why Ontario beekeepers and New York, Wisconsin and Minnesota beekeepers, if you please, changed from comb honey to extracted honey production.

In the comb honey days beekeepers found this first law of comb honey production. That the colony must be strong enough to fill the brood chamber before it was time to put on the supers. That is the first law, so that the bees will go into the supers when they are put on.

In those days the beekeepers did not know some of the things about the care of colonies from, say, August of one year until the honey flow commenced the next year, so as always to have their colonies good and strong at the time the supers should go on; so that sometimes they had the brood chamber two-thirds full, so that the bees, instead of going into the supers, began to lay in honey in the brood chamber and crowded the queen down, so that they had swarming and all kinds of trouble.

If the bees are not numerous enough to fill the hive, they must cut down the size of the hive; and that is what they did. They cut down the size of the 10-frame hive to an 8-frame hive. And at a meeting in Chicago of, I think, the National Beekeepers' Association, they had a debate as to what is the proper size of the hive, and they said if they were to start all over again, the proper size would be six Langstroth frames.

Now, we have gone the other way, and we find that, instead of six frames, our ten frames are not enough, so we loan the queen a super in the month of May, and then later on put her down; so we get very large colonies.

I have looked it up, and you would be surprised to know that under the

conditions that they used to have they thought they used to do well when they had six or seven frames of Langstroth size filled with honey. No wonder they wanted comb honey production.

If I say nothing else in regard to comb honey production, I would want to say to beekeepers who know how to get the big colonies you are getting now, that if you turn around and take off the top super and put on two, may be three, supers, at the beginning of clover flow, and have bees enough to pull them out and fill them, the strange thing is that you are not going to have as much swarming as we used to have.

Those who quit honey comb production before we learned how to produce extracted honey, really are not in a position to actually measure what can be done in comb honey production.

I am now going to be brief and outline only a few short cuts in comb honey production. I said a while ago the yield ought to be, in the hands of a good many in the comb honey region, the clover region, in the neighbourhood of as many sections weighing 12, 12½ or 13 ounces, as pounds of extracted honey. I say, ought to be. The labor involved is, no doubt, more in comb honey production than in extracted honey production, because the comb honey man puts his in packages ready to sell over the counter, while the extracted honey man puts his in larger packages and sells them to a man who puts them in packages to sell to the man who sells over the counter. You, I believe, have the five-pound pail, and have educated your people better than we have.

I have three apiaries, of which two are run for comb honey, and one for extracted honey, and when I go home from the extracted honey, I am pretty well tuckered out, and when I go home from the yards for comb honey production I am much fresher. I have a young man who lifts the supers to get the honey out of them. The colonies for comb honey production are better, so far as stores are concerned, than are bees for extracted honey production.

Ontario beekeepers learned the importance of filling the brood-chamber with some kind of food in the fall, so that the bees would have plenty of material for winter; and the one thing which has made the beekeepers in Ontario, to my mind, aside from your excellent pasture, is that you learned to feed your colonies with the very best kind of food for the winter.

In a poor season, the comb honey producer does not fare very well. Comb honey ought to be produced under favourable conditions only; and during poor seasons, it is a good plan for the producer to produce for extraction to be used for feed or for sale as extracted honey. In the south, they should not produce comb honey where it is off colour, or a bad market.

Comb honey should always be for a market for high quality, and the beekeeper who has the time and patience and is willing to go after that market is going to get more dollars per colony than the other man.

Is there a new comb honey era in sight? That is, are we going back to comb honey? I believe that we are, to some extent. I believe we are going back far enough that this great region of Ontario, of north-western Ohio, north-eastern Indiana, of the little strip through Michigan,—and don't let me forget Jefferson County, New York, and part of Vermont, and part of Wisconsin, and part of Minnesota, where the white and alsike clovers abound,—will be changed back toward comb honey production, enough to keep before the American people that finest of all food products, honey in the comb, which attracts people by its appearance.

I try to keep in touch not only with honey production, but with honey markets, and in order to do so, I recently went out to sell honey for half-an-hour,

or an hour. I went into a grocery store and took a case of honey in. He said he did not want it, he had some honey. I said: "What kind have you got?" He said: "I have some in jars." I said, "Yes, but this is comb honey." "Yes," he said, "I know, but I have got plenty of honey." Then a lady who had come, said: "Why, here is some honey." I said: "Yes, he is going to buy it, and you can have some of it, if you like." He said: "I am not going to buy it." She said: "I would like some of that honey." The storekeeper went back and got a jar of extracted honey and sold it to her. Comb honey does help to sell extracted honey, and there ought to be some of it before the public all the time; and I hope we are not going to lose the comb honey market. It is slipping away from us in the States, but we are not going to lose it entirely, but it will stay until we can get back on our feet on comb honey production.

This subject is so big that all I can do is to talk about it a bit. I wish we could learn how comb honey producers could get along without swarming. They have learned short cuts, and made it a business, instead of the little, puttering thing it was thirty years ago.

I remember how my good wife and myself put up 100 comb honey supers, of sections and foundation, in one day. Recently I learned that I, myself, could put up a hundred of them in a day, and when we worked together, we could make up 200 of them in ten hours, more easily than we could put up 100 in eleven or twelve hours. That is one thing that takes away a part of the detail work in comb honey production. There is no reason why we should not go on and develop methods in a wholesale manner, which would gradually reduce the cost of comb honey, so that it will stand on a business basis, instead of being a job for a fellow who wants something to play with.

Short cuts in invention is another interesting thing. I know one beekeeper who goes into an apiary, and in two visits he can settle all swarming for that year. That is in a comb honey apiary. These men do it with something like a thousand colonies. Two visits settle all swarming for the season. But I have not the time now to go into that.

MR. SIBBALD: I am one who dropped comb honey production about fifteen years ago, and, do you know, it is like past history to get up now to talk about comb honey, something with which we have not been familiar for a number of years. I have thought, though, that is it time that the beekeepers of Ontario were turning a little more to comb honey. You go in this year to sell honey to a grocer, and he says: 'Well, I have plenty of extracted honey. Have you got any comb honey? Well, that is too bad, isn't it, because if we would slacken up a little on extracted honey, we would sell more comb honey and fill the bill.

Our friend who has just spoken says that comb honey helps to sell extracted honey. I will tell all new beekeepers that comb honey helps to sell extracted honey in this way: You go into a store, and they always want comb honey, and if you can sell it to them, they will take extracted honey from you also, and in that way you will make a customer which you would not have got otherwise. I agree with what has been said about the production of comb honey. I think that from fifty to seventy-five per cent. as much comb honey can be produced as easily as one hundred per cent. of extracted honey. Sometimes I have thought that when bees are in the right condition for comb building and a good season, that you could almost get as much comb honey as extracted honey.

I think that the reason we have all drifted away from comb honey production was that, for so many years we had such a good demand for extracted honey. It seemed easier to produce and that we were making money more easily out of extracted honey. Now, we may be faced with another problem, that is, over

production of extracted honey, and under production of comb honey. I am aware that the comb honey subject is not a popular one, because out of our whole membership here to-day, there are not likely more than five or ten comb honey producers, so, what is the use of talking about it, except just to review the position in the past. But it looks to me now as if it was about time some of us were again thinking about it, and becoming more interested in hearing about the short cuts to production.

I have been on the Crop Report Committee for a number of years, and the amount of comb honey reported is insignificant. You can hardly get enough reported to form an idea as to whether there is any comb honey to be had. We could hardly tell a man where he could get 10,000 pounds of comb honey; and yet, year after year, there is more extracted honey being produced, it seems, than the market calls for, especially this year. I produced a little comb honey this year, just for our own use, and we like to have some to give away. People appreciated the gift of comb honey more than of any other kind. They always want to buy comb honey, and we have not got any to sell, and that seems too bad.

The chief thing, in producing comb honey, is to crowd your bees. Whether it is a small or large hive, you must have more bees, almost than you can crowd into your hive. Then they will go up into your supers and draw them out evenly, and, as you put more supers under this super or supers, they will build them out in a few hours. When they are in a fat condition, with plenty of wax secretion, they will build the comb out almost in twenty-four hours. I have often thought we were foolish to value our extraction combs so highly. If you put in a full sheet of foundation, you soon get a fully drawn comb, and yet, you and I put up with a lot of old and damaged combs.

Mr. White: I am not a public speaker, and I am not an experienced comb honey producer, but I have brought a case of comb honey with me, and would invite Mr. Demuth, Mr. Sibbald and other comb honey producers here to kindly criticise it, so that I may get ideas and we may all learn something. I have not produced very much comb honey, but have had good results so far. There are a few essentials that we must observe if we are to produce fancy comb honey, and we must produce fancy comb honey in order to get a good market. The first thing is to get a good flow of white honey. Any other colour of honey is out of the question for comb honey; you could not sell it; it would not appeal to the people at all, but a nice, fancy, white honey is the most attractive form of honey which can be put on the market.

As to the demand for comb honey, I have found that when you go into a grocery store to sell honey, and quote a certain price for extracted honey, they think you ought to put in your comb honey at just two or three cents a section more, and that, that would be about the right spread. For my part, that is not enough at all, there is got to be considerably more. My method of production is about the same as that followed by Mr. S. D. Hughes, of New York State. He gets a super white honey in white extracting combs filled, and I believe he shakes all the bees and the queen onto that super of white combs, and then puts his supers of sections on top of that. I followed that out and got fairly good results, but I have had, as I say, very little experience.

Mr. Howe: I do not think my brother knows New York State. I have been in Johnstown, N.Y., when you could not sell white comb honey, but you could sell buckwheat honey as fast as you could offer it.

Mr. White: Why do they want white honey in one place, and dark honey in another place?

MR. HOWE: Because they like. I produce it.

MR. WHITE: I was speaking of the local markets. In New York State, I understand, in some places if you offer them white clover honey, they would think it was made up.

MR. COUSE: I have asked men who wanted honey what kind they wanted, and have been told that they would rather have the dark. Wherever there are foreigners, you will have inquiries for dark honey. People from certain parts of Europe know dark honey, and want it. To-day, coming in on the train, some one said he could sell dark honey; and it was only a short time ago that I had an inquiry for dark honey, and that is the reason. If people are accustomed to using it, that is what they want. If you go to Scotland, they want heather honey, and think there is nothing like it, because that is what they have been brought up to. But here, we would not stand for anything but clover honey. It all depends upon what you have been accustomed to; what you have been fed on is what you like. In towns where they have a large percentage of foreigners, there is a good demand for dark honey.

MR. DEMUTH: I am at a loss to know on what phase of comb honey production I should talk. As I was coming up to the platform, one lady said: 'Tell us when to take the sections off,' and a gentleman said to tell you the short cuts, and there is a request about judging the comb honey which is here. This is a very beautiful and very appealing example. The gentleman asked for criticism. One of the first things I notice, is that he put his foundation in wrong. Foundation has what may be spoken of as a selvage edge and a cut edge. A sheet of foundation comes and we cut it in four pieces and put them in the sections. Now the end of the sheet, not the selvage edge, should be fastened to the top bar. You notice in this section, the comb is not attached to the bottom bar of the section, as it should be. For some reason that I never have been able to explain, the honey is fastened better to the bottom bar when the foundation is put in with the cut edge, or the end of the sheet to the top bar, just in reverse to the way in which it is put in the brood chamber. It gives it a peculiar appearance, you can tell from the way the rows of cells run in the comb.

In Ontario, I believe you sell light weight sections better than you do heavier sections. On our side, they insist on having a wider section. A grocer likes to buy a bigger box, I presume it is because it looks better. The box is smaller that it is with the bee way section, but it is not a serious objection.

Now, about short cuts in comb honey production. I am going to mention just a few. I realise I am not talking about your baby, and that the subject is not a popular one, and I would rather make a hit among you, than come here and talk about something about which you do not want to be told. But I am going to mention a few things I have seen. If I weren't too personal I would tell you how I produce comb honey. However, I will go ahead and tell the story briefly, and you can then ask questions. It is nothing to brag about, and if you were to come to my place, I would be like you are when I come to your place. One of the first things said is: 'If I had known you were coming, I would have had things fixed up better,' and I would not have been very much pleased if you had come to my apiaries last May. I had to move from Washington, D.C. to Medina, Ohio. They had sold the house over my head, and I had a machine which was somewhat antiquated, but I had to drive it through. I knew my bees were on the verge of swarming, but I was in hopes that they would not, because they had two stories and they could build up to tremendous strength; but I drove my old car pretty fast and got through about 700 miles in two days.

I found some of the colonies had swarmed. Now I will go back and tell you what was done so as to tide over eleven months without seeing them.

When the comb honey supers were taken off, each colony was given an upper story of honey provided for that purpose. They were packed up by hired help. And I may say that I cannot always get help, and they sometimes pack hives, whether there are bees in them or not. They pack everything. In that way I got my bees packed. They do not need much attention after July in that region, because the white clover honey flow is all we have, and it ends in July, and there is nothing then until the next spring, to amount to anything. They had plenty of stores, because they had fifty or sixty pounds of honey. They had lots of room for the spring brood rearing, because they had two stories. When the men put on the packing, they were pretty well protected, not as well as they are this year, because I have packed them myself, this year; but they came out fairly well last spring.

From 1911, when I have been out of the apiary, my bees have come out better in the spring than they used to do when I used to be there, and puttering with them all the time. I pack them up in July, and do not come back to them until the next spring, and they are better than they have been for years.

I arrived on the last day of May, and did not waste any time in getting out to the apiaries, where I found to my sorrow, that some of the colonies had swarmed a week earlier, which gave them an opportunity to get away. The first job is a somewhat heavy one. You have to take off the extra hive body and clip the queens, and cut out the queen cells from those which had swarmed and were about to swarm again with a virgin queen, if you do not hurry. That took me three days, and I went back somewhat fagged out, after going through two hundred colonies. I worked on the eight-hour plan,—eight hours in the forenoon, and eight hours in the afternoon. Then, when I got the supers on, I went back to Medina, and got out the next issue of 'Gleanings' in 'Bee Culture,' and was somewhat nervous because I had put on some comb honey supers on the first day I was there. I went back to that yard, just before I started away, three days later, and they had filled those that had the single comb honey super, and needed more room. Those which had two supers had filled the one, and were working on the second; but I had to go back to Medina and get out the 'Gleanings.' And that copy of 'Gleanings' cost me more money than you paid for it. I went back in one week later, and found that all the colonies which had the single comb honey super, had filled and sealed it. I had put on one and two comb honey supers when I ought to have put on two and three. I found out that I could put on two hundred in a day, with the aid of my wife, and thanks to the automobile manufacturers, it did not take long to get the supers out there and get them on, so that they had four honey supers, and although the season was well gone, I had my combs filled.

When comb is built rapidly in that way, and you put in full sheets of foundation, comb is drawn in twenty-four hours. So that we got an average of about four comb honey supers per colony.

Now what about swarming? Here is a strange thing. In 1922, there was no swarming in comb honey production in the apiaries. In 1921, there was no swarming in the comb honey apiaries,—I mean that there was no swarming after I got there, and it was not the fault of the bees that they swarmed; it was my fault. So that in the two years 1921 and 1922, all I had to do was to put on the supers and take them off.

I forgot to tell you what I did with the second story. It has been my habit to take the second story off. It is usually filled pretty well with honey and brood

and pollen, and it has been my habit, when I thought I could keep down swarming, to put the most of the brood in the other hive body left on the old location, and tier this up. Nowadays we do not have weak colonies, and the only way to do, is to set aside some of the colonies, to tier these up, so that they will fill them completely, and have one of these to put on each hive body at the end of the season.

What is the cause of it? If somebody will lock the doors, I will tell you. One man said it was because the colonies were too strong; then some of us, who are from Missouri, reported that some of our weak colonies swarmed. Some said it was because we had honey flow. Some of us replied that we had swarms in poor seasons, and sometimes in our good seasons, the bees did not swarm. Somebody said it was because there was an entrance to the hive. If you nailed it up, that would end swarming, wouldn't it? Some said it was in the blood and should be bred out. I believe one advertiser did advertise, at one time, that some breeders had developed a non-swarming strain of bees. I believe those men were honest in thinking that they had; but the facts were, that those men during the time they were developing those bees. had changed more than the bees had, and when you and I bought those non-swarming bees, under our bad management, they swarmed as badly as our own bees had done.

Some said bees swarmed because of the shape of the hive. Perhaps the shape of the hive had something to do with it. I saw hives one place, under the eaves of a courthouse, four feet wide, and those bees swarmed and went away and built under the eaves of the courthouse.

Some said if the bees were put in an attic, so that they could spread themselves, it would stop swarming. But when you and I tried it, those foolish bees swarmed sometimes.

We have all known all along that bees swarm when certain conditions are present. I remember one time seeing a colony of bees which was wintered in a Danzenbaker hive—(I hope you haven't very many of those up here). That hive is all right in some respects, but the trouble is that they exploited it as a single story hive. That colony did not winter well. In the next spring, the queen moved upstairs, and they built a little brood nest in the shallow extracting super, about four inches deep and seven inches long, and put honey and pollen around there, and did not touch the combs down below, crowded that shallow space and swarmed. That, I remember, was plenty big enough for that colony, and yet it swarmed.

We know we can reduce swarming considerably by making the bees comfortable in their hive. Beekeepers have said for years that, if bees are kept comfortable and contented that is, run along the line of production, instead of the line of increase, there will not be much swarming. We know that the extracted honey producer almost eliminates swarming, by taking the bees up into the super early, and enticing them up into the next and the next, so that they expand as fast as the need for room comes on.

We know that in comb honey production, if the honey flow is good, and we give the supers at the right time and place and fast enough, we can greatly reduce the amount of swarming.

We know also that while years ago, one beekeeper down in Texas made a startling statement, that when the honey flow begins, swarming ceases, someone in Ontario, said that when the honey flow begins, swarming begins. I believe that is true in Ontario. In Texas, when the honey flow begins, the bees are ready to quit swarming.

If I have two colonies, one made up as to three-fourths of its population, of bees old enough to go to the field, and the other one, with the same number of bees, with three-fourths of them not old enough to go to the field, and the honey flow comes on, which one is going to swarm? You know it is the one with the young bees. If the beekeeper is getting the young bees up into the supers, as soon as he can, he will get rid of swarming. It has been my job for years to prevent bees swarming.

You will see that I wrote in "Gleanings" for "Bee Culture", that there would not be much swarming in the white clover region in 1921, except where the season was prolonged. How did I know that? Because the bees had built up early, and had reached the stage where they had three-fourths of the bees old enough to go out into the field rather than in the stage where three-fourths of the bees were too young to go to the field.

There is one thing which is true in regard to all swarming. If they build a barrier of honey all around, the hive becomes honey-bound. Whether they have a queen two years old or two weeks old, whether they are from a strain of bees given, or not given to swarming, that is one thing which is always present, a crowded condition in the brood chamber, not in the hive. I do not care how many bees we have in the hive, if they are distributed properly throughout a large hive, there is no trouble from swarming.

I forgot to mention that in the tropics, beekeepers do not know what swarming is like. The producers in Porto Rico do not know swarming. Beekeepers in Ontario know that swarming is one of their greatest problems. What is the cause of the difference between them? Because in Ontario the bees come up with a rush in the spring, and have a great number of young bees just at the time when the clover comes into bloom, and not enough of those bees are field bees. If we get our colonies up to strength in time, so that most of the bees will be field bees, they get over the peak of brood rearing, and we may go a long way towards getting rid of swarming. But it sometimes happens that weather conditions or honey flow conditions, or something of that kind, causes the field bees to stay at home, and then we have our trouble from swarming.

I remember in 1916 the clover yielded only in the afternoon, and during the forenoon, a great portion of the bees were hanging outside of the hives or crowded among the frames. If you took out a comb in the afternoon, you would find the old bees in the bottom,—you know how they crowd up in the evening; that is where the field bees stay under some condition when they go home in the evening. I believe those field bees are a great factor in bringing on swarming, by a crowded condition in a brood chamber, than the young bees.

It is time now to announce that the cause of swarming has been discovered. The cause of swarming is a crowded or congested or uncomfortable condition in the brood nest. A colony of bees may build a barrier around itself, by storing honey and limiting itself to space, and so producing congestion, and a feeling of strength, that makes it want to divide itself and make increase. Beekeepers knew all these years, that the thing to do was to relieve that condition, so that the control of swarming was largely a matter of a proper distribution of bees throughout the supers.

I will mention one method. We do one of two things, when swarmings persists. We either create a condition in that colony comparable to a swarm in nature, or we build a condition comparable to apparent colony. Old beekeepers held that a swarm seldom swarmed twice in the same season. That led beekeepers to say that that was because the parent colony had a young queen. Then we thought we would put in a young queen, and we sent south and got the

young queen. I remember one time putting in a young queen, and within two weeks there was a swarm.

It was also said that if the queen was reared in the hive that year, that colony would not swarm; if it mates and begins to lay, that that hive does not swarm again that year. But we also know that if we take out the old queen for nine days, and then introduce a young queen from another hive, the same condition applies, that the hive will not swarm again that year. If we re-introduce the old queen, they are not likely to swarm again. We can re-queen the colony after ten days of queenlessness.

One of the short cuts on re-queening is one of the things worth mentioning. You remember, I said my bees were in two stories. Now, supposing, that before the honey flow begins we go through and slip a queen excluder between the two stories, and then go back some days afterwards and take away the one in which the eggs are; we have then taken away the queen without having to stop to find her. We take that storey, with the queen, and put it down at the side, and think of it as increase. We give the other one a ripe queen cell. There have been no eggs laid in that chamber for a week, and we have taken away the queen and have re-queened with a young queen reared this year, and that colony is probably free for that year.

I will tell you how Mr. Rocks, of Colorado, handles his bees for comb honey production. He and his son take a truck load of comb honey supers out to the yard. Their colonies are in two supers. He takes off the cover, lifts the upper storey, puts in a comb honey super and puts on top of it, a honey board, and lets down the second storey and goes on. It takes him only a short time to put on the supers. He goes back after a week and sees if the queen is there,—he looks not for the queen, but for the eggs, and takes away the chamber in which the eggs are, and gives the other one a ripe queen cell or a young laying queen in a cage, and goes on. Now that colony has been queenless for a week, and if he puts in a young queen, she does not come out for a few days, so that it is about ten days of queenlessness, and that colony does not swarm again that year for him. That is a method of swarm control of prevention which can be worked with two visits.

I am going to mention one thing more, because I see you are getting tired. Instead of tiering up the second hive bodies, last year, I was so rushed for time, and did not have any weak colonies to tier them on, so I set them aside, side by side with the other colony, and gave them a queen as well. At the close of the season, these colonies had a lot of honey, because it was the top storey, and they had crowded the top storey so that the queen had been crowded down; and they had lots of honey with a young queen; they had put in so much honey that she could not lay much. When the comb honey was taken off, a newspaper was put on top, and when I go to them next year, I expect to find sixty or seventy per cent. of them with young queens. Why don't they all have young queens? Sometimes they inadvertently kill the young queen and retain the old one. In my experience, between sixty and seventy per cent. of the colonies are re-queened in that way. If we could work out a system so that young queens from select stock could be put in every year, a great many of the problems would be solved, because that young queen would be in fine condition to take up her duties.

Someone asked as to when to take off the sections. They should be taken off as soon as they are sealed. You cannot always wait until all are sealed even in the corners of the super, because if they are left on longer, the bees will begin to soil or propolize the surface of the comb. Usually, when taken into the

honey house, the supers must be sorted; and it is seldom, in my experience, that all the sections are filled right out to the corners; but the one or two unfinished may be taken out to the hive and finished there. The sooner comb honey is taken off, the better. When the honey flow does not promise to be good, the first thing is to get the second storey filled. I do not know whether I would advise that in Ontario or not. If it does not promise well, I would rather have them put their honey in combs, than to have their combs spoiled. In order to make a success, you have to miss, once in a while, a honey production, so as to have the quality which will bring the top price, in order to justify the extra labour.

MR. WEIR: How much honey would you expect to get on a scale before putting on a super.

MR. DEMUTH: I have not had much experience with a scale. As soon as the bees will go into a super and fill it up, you should put on a new one under. Of course, no one knows, or can predict, what is going to happen in the honey flow. If they are willing to draw out the foundation, let them draw it out. If you give them a section filled with full sheets of foundation, that has a market value of so much, raise up the other super. The beekeeper says he does not know what the weather is going to be like to-morrow, and if he puts the new super underneath, it may get drawn out, but it may not be filled, and if it is not filled, possibly it may jeopardize his chance of getting the first super filled; and he does not know what to do. Then he figures it out in this way: If I can put it underneath and it is a mistake, I can take it out. If it has been a mistake, and the super has been drawn out, it is worth more than it was when he put it in. If it is sealed, it is worth more than it was when it was put on. I have always felt that it was well to be liberal with colonies of bees in adding supers. If I had my way about it, I would have every colony draw out the foundation in five supers as quickly as possible. If I knew I was going to have five supers filled, I would give them six, and let them go to it. But you cannot predict, and, therefore, if you give them supers as they need it, and let them work at it, you have pretty nearly extracted honey conditions. They will draw out a super in about twenty-four hours, and that becomes a receptacle for putting raw nectar. Then if the season fails, the super can be taken out, and it is worth more than it was worth as foundation.

MR. THOMPSON: Do you use a separator?

MR. DEMUTH: Yes, fences.

MR. THOMPSON: I have been trying for some three or four years to produce comb honey, but have not been very successful. I used Jumbo hives. Last season I made a number of eight frames hives of Jumpo depth, and transferred frames with brood in them, putting the others somewhere else, and was more successful? Is that good practice?

MR. DEMUTH: In comb honey production they must have the brood nest filled. To have it actually full of brood, if possible, before the honey flow begins. In the case of the standard hive where they work in two stories, the thing to do is to take the ten frames.

A MEMBER: In the case of a ten frame Jumbo, with a frame of pollen on each side, would you take that out?

MR. DEMUTH: No, that would be just the same as a division board. That starts the trouble by putting honey around the brood nest, neglecting the super and putting the honey in the brood chamber.

A MEMBER: Do you use queen excluders?

MR. DEMUTH: Only in the case of making shook swarms; the queen ex-

cluder is used then, but not in comb honey production. Some people write in about the queen going into the sections. The way to prevent that is to use full sheets of foundation.

A MEMBER: Do you use starters on the bottom?

MR. DEMUTH: I do not believe that in this section there is much to be gained by using starters in top and bottom. If the year is poor, it is poor anyway. In such cases the bottom starter is better. In Colorado, they find it better to use a starter in the bottom; but in the comb honey sections, I do not think they will find it any advantage, provided the foundation comes down to about a quarter of an inch from the bottom bar, in which case, they draw it down and attach it right away.

During the honey flow, the beekeeper wants to squeeze out of his bees every ounce of energy he can. Many colonies can store twice as much honey as they do if the conditions surrounding them are different. In other words, you reduce the amount in the supers by producing conditions which induce loafing. When you get bees to do their utmost, you are also reducing swarming. The two things go together. You coax the young ones up into the supers, and then you get conditions which are completely opposed to loafing or to swarming. But when they are crowded in anyway, especially in they build a rim of honey around the brood nest and seemed to be content, as at the end of a season, then comes on loafing. But during the season, there is no reason why there should be loafing.

MR. TILLSON: Did I understand you to say to put the selvage edge at the bottom?

MR. DEMUTH: The selvage edge at the side. In other words the foundation is put one end below the other attached to the section. The side of the sheet is thinner on account of cutting across the one way.

MR. TILLSON: We usually put them in split sections.

MR. DEMUTH: How long does it take to put in the split sections?

MR. TILLSON: No longer, I think.

MR. DEMUTH: We want the colony to produce comb honey as strong as we can make it, and, when we think we have overcome swarming, we rob the top of some of their bees.

A LADY MEMBER: Do you think package bees can be added to strengthen a hive?

MR. DEMUTH: If a colony is strong enough and has built up well in the spring, the package bees might be better used otherwise. I do not believe it would pay to buy bees from the south expecting to use those bees as producers, but it does pay to buy bees from the south expecting to use the offspring of those bees as producers.

MR. DEMUTH: The super I like best has wide frames. I believe the next best I would prefer to have the slats nailed at the bottom. I very much dislike holders such as factories make.

In some regions the propolis is so bad that it is a pretty good plan to have the sections covered top and bottom. I find in my case, I can handle them faster. The kind I use has four sections in one frame.

A MEMBER: What do you do with unfinished sections, at the end of the season?

MR. DEMUTH: As soon as the beekeeper is satisfied that the season is over, or a little before, I think everything ought to be snapped off the hives, and if there is only a little honey, the bees may be allowed to rob out the honey. If there is much honey in, the beekeeper can extract it and put it away for the next

year, and take a hot honey knife and slice off the cells to within about a quarter of an inch from the base, and use this in the supers for the next year. That saves time.

A MEMBER: Are those carried over sections fancy?

MR. DEMUTH: If the wood has not been injured. They are generally filled better, if the beginning of the honey flow is slow, than big combs are. If the sections are not taken off as soon as they are finished and sealed, they will be hurt.

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## CENTRAL VERSUS OUT APIARY BUILDINGS AND EQUIPMENT FOR THE PRODUCTION OF EXTRACTED HONEY

MORLEY PETTIT, GEORGETOWN.

I have taken the liberty of broadening out the subject just a little, and taking up something about the equipment in general as well as particular reference to the buildings that we use, and the question of whether we should bring our combs home to extract or should extract them at the outyard where the honey is produced.

With the exception of the hives in which the bees are also interested, apiary equipment is simply the tools of beekeeping. A skilled workman can do fairly well with poor tools, but the best of tools will not make a good workman or beekeeper, therefore we must not stress too greatly the tools, although it is very important that we should have the very best equipment that we can get within reason. This is particularly true now that the question of falling prices is before us, and we are finding each year, that we start where prices left off the last season. Then somebody cuts the price a little further; and prices keep sliding down the scale until we end up the selling season several cents lower than where it started. I often wonder whether we are like the proverbial frog, which was trying to get out of the well, but kept continually slipping back. If we are to have tools, we should have the best we could get.

The most important tool in the apiary is the hive. It is more than a tool for the beekeeper, it is a home for the colony. Its twofold purpose has to be considered in its construction. Besides housing the colony in a manner which will promote its prosperity and encourage the storing of surplus, the hive must be convenient for the beekeeper to look after the needs of its occupants, and to take care of the surplus honey.

For the good of the colony, there must be plenty of good worker comb in the brood chamber for the queen, and an abundance of food at all times. Whenever nectar may be gathered, ample comb space should be available for storing it between the brood and the sealed honey. The queen always prefers to lay her eggs in a circle on each comb, matching this circle on the next comb, and so on, until the brood nest assumes the form of a sphere. She will lay worker eggs only in cells which are the right size and nearly regular in form. Hence it is important that the brood chamber combs be deep enough and nearly perfect enough, as to worker cells, to fairly well accommodate the circle the queen would make. The trouble in getting perfect combs, even when full sheets of foundation are used, is that the new comb will sometimes sag with its own weight, stretching and spoiling a number of cells near the top bar. These not only reduce the queen's circle of brood, but make a barrier of sealed honey which the bees are slow to pass in entering the supers. This trouble may be largely overcome by

using heavier wires, heavier foundation, but more particularly with the new Dadant wired foundation properly fastened in the frames. From the standpoint of the bees, it is important then to have brood chamber combs with a sufficiently deep perfect surface to accommodate the queen so she will occupy it right to the top bar and not be cut off at the bottom. Whether Langstroth or Quinby depth are required, I am not prepared to say. Advocates of the latter have stressed the winter stores they will hold, but that is against them for me. I do not want honey in the brood chamber, never. The food chamber takes care of that in a more satisfactory way. This is a standard shallow super which is never removed from the hive. It fills up in times of plenty and gives out in times of need. It is the automatic feeder. For extracting supers we prefer the ten frame Langstroth every time.

To properly house a working colony the hive must protect it from wet and extremes of heat and cold. The cover should be double with packing to check the escape of heat on cold nights, and the entry of the hot sun's rays. Packing cases for winter should provide ample packing on bottom, top and all sides. We use four inches underneath, six on all sides and twelve on top.

When the comfort of the colony has been well looked after, the convenience of the beekeeper must be considered. We prefer winter cases which hold four hives and are collapsible. The standard reversible bottom board is used, but never reversed, always the deep side up. The summer cover telescopes the hive with a metal edge only, to save space in loading hives on trucks. All working parts of the hive must be exact in measurement to be well-fitting and inter-changeable. The bee space of five-sixteenth inch must be carefully observed. All bracecombs and burrcombs may be attributed to faulty bee-spaces, and they are no end of a nuisance in the manipulation of frames. When we consider that our hives last a lifetime, and so much depends on accurate spacing, only the most careful workmen should be allowed to make them.

The bee space is an old subject, but worthy of attention. In whatever part of the hive, the bees have free access, they recognize a certain space as being satisfactory. Opinions of this vary from three-eighths to a quarter of an inch, but I consider five-sixteenths inch as being about right. Spaces less than this the bees will fill with bracecombs, hard structures of wax, firmly built as though they feared a collapse of their home. Spaces more than a bee-space are liable to be filled with burrcombs, and even honey in a time of crowding. The burr-combs built between supers which drip honey and attract robbers when taking off, could be mostly avoided by accurate spacing between top bars and bottom bars, etc. The former, built between moving parts, are more to be feared, although the latter are bad enough. The worst of either is, that unless they are thoroughly scraped off they spoil the space, and cause more wax to be added wherever they go in hive manipulations. We have some supers which are too short for the frames, that is, there is not a bee space between the ends of the frames and the end of the super. Each time these frames are removed, after a struggle, there are found hard ridges of wax on the ends of the frames and running up and down the ends of the supers on the inside. Unless this wax is all scraped off, the frames will be waxed fast to the next super they occupy, because the wax spoils the beespace, and of course, the next frames will be waxed harder to the faulty super. That will be two supers and two sets of frames spoiled for manipulation instead of one super and one set of frames. When these are both shifted at next extracting, there will be four supers and four sets of frames spoiled, next time it will be eight. So the evil of the poorly made supers may spread like an infection through the accurately made ones.

Needless to say the man who made them is not getting any more orders from us.

A beekeeper's buildings and equipment will depend on his general system of management. If he moves his extracting machinery from apiary to apiary, he can use vacant houses or temporary structures, which can be made fairly bee-proof at moderate cost. A complete extracting outfit at each yard, will involve more expense for equipment; and if he brings all supers home to extract, a good central plant will practically replace all out-apiary buildings.

All three systems have their advantages and disadvantages, and each beekeeper must choose the one which in his case has the most of the former and the fewest of the latter.

Before the days of power machinery and motor transportation, one of the outyard arrangements seemed the best. The hand extractor was easily moved and set up, or a complete set of extractors was not expensive. The smaller output with hand machinery simplified the handling of the honey and getting it all home each night. On the other hand teaming supers home and back again was slow, costly, and dangerous.

In one way the introduction of the automobile, made this arrangement more desirable by shortening the time on the road, and leaving more time for work or recreation each day. But out-apiaries have to be moved sometimes; temporary arrangements are little more than a makeshift, and one tires of always working under these conditions.

Then came the more general use of power extractors with increased capacity which complicated the matter of moving and setting up machinery, and increased the difficulty of clarifying, filling and taking home all the honey at the end of each day's work. Some advanced beekeepers immediately bought motor trucks, as the lighter ones were then coming on the market, and started taking all supers home to extract. The high cost of trucking at that time, deferred most of us from following their example, but I have not heard of anyone going back on that system after once testing it thoroughly.

Then came the Ford truck. With its low first cost and sturdy dependability it did for the central extracting of honey, what the light Ford had done for the establishment of out-apiaries. At first it had hard tires on the rear wheels, but with shock absorbers, it would draw a load of one to two tons of full supers, with no breakage of combs when driven with reasonable care. The pneumatic tires now make it quite inexcusable to break combs even on rough roads.

When apiaries are all managed from one central plant, the advantages may be listed as follows:—

1. A thoroughly suitable building may be erected on the beekeepers' own property, where machinery can be permanently installed. A systematic person will then gather around him all sorts of labour-saving devices and conveniences, which take time to accumulate, and which frequent moving to out-apiaries will completely disorganize. I am referring especially to the tools one uses only occasionally which must have regular places and be kept in them, or they can never be found when wanted.

2. There is less expense for equipment than where each apiary is equipped, and less wear on machinery than where one outfit is torn up, moved, fastened down and torn up again from time to time.

3. Larger and better machinery will be used, and it will be installed in a much more substantial manner when it is going in to stay.

4. More pounds per day will be extracted because of the improved machinery.

5. The work of extracting and caring for honey and cappings is done at

home, where meals and hours can be regular. If the beekeeper wishes to fit machinery or do other chores before and after hours he is there to do it instead of travelling on the road.

6. It is much easier to get and keep efficient help when the irregular hours and meals and the uncomfortable conditions of extracting at outyards are eliminated.

7. Honey can be pumped into large store tanks and left there to blend and clarify and free itself of foam for a few days before filling into selling packages. These tanks at out-apiaries are too big a temptation to "robbers."

8. The work of extracting once started, can be carried through more systematically.

9. At the end of the season all supers may be left at home for the overhauling or painting many of them will require.

No doubt the advocates of this system will know other advantages which I have missed. The disadvantages of bringing supers home to extract are:—

1. The expense of hauling full supers home and empty ones out, including some risk of combs being broken or bruised so as to cause honey to leak out and waste. This includes first cost, upkeep and depreciation of truck, gasoline and oil, and time of driver on the road. Against this must be balanced the fact that out-apiaries could not be managed without at least, one truck, almost as many trips to the out-apiaries would be needed to go to work as to bring supers home and take empties back, especially as the honey and wax have to come home in any case, and the tearing up of extracting machinery, loading on truck, and unloading and setting up, take a lot of time and is mighty unpleasant work.

2. The trouble with robbers when wet combs are taken to a yard in the absence of a honey flow. This is all removed by having the combs cleaned out at home, before loading them for an outyard.

3. The honey has lost all of the hive heat before it gets to the extractor. This is some objection, but with two eight-frame extractors and lots of power, we can whirl the combs fast enough and long enough to get satisfactory results even in fairly cool weather.

4. A more serious objection is the danger of spreading disease, and I would advise going slowly until it is pretty well eradicated from all apiaries concerned. The danger can be overcome by extreme care to prevent robbing at every step. Then if all colonies are thoroughly inspected several times during the season, and cases treated whenever found, so that no supers from any cases are extracted with the others, there is not much to fear.

After several years of moving machinery, first the hand extractor and capping can in one-horse waggon, then the power extractor, engine and capping melter with a team, and later in a truck, I became a convert to the central apiary building idea, and built one in 1917. In building this, some ideas based on modern principles of factory equipment were incorporated, and after using it five years there is not much in the general plan we would wish changed. But it is not half large enough. We thought it was extra large, and it was, for its day, but in reality, it was not large enough for the four apiaries we then had, and now we have nine. I say this, merely to warn prospective builders to plan large, then build double the size you plan, and after that it will not take so many additions and lean-tos to accommodate your requirements.

The building is 24 feet by 40 feet, with walls 16 feet to the plate and a gable roof, of one-third pitch. It is built on a concrete foundation, and has two stories and attic, with a 4-inch cement floor downstairs and a pine floor on ten-inch joists overhead. The joists meet on a middle partition making a floor

strong enough for whatever may be stored upstairs. The ground floor is divided by the middle partition, which stops eleven feet from one end for a garage running across the buildings and extending six feet in front. This garage being about eleven by thirty feet has room for a ton and a half ton truck. We had to set up a small garage outside for a passenger car. The three machines take care of our work with six hundred colonies fairly well. The other two rooms, each twelve by twenty-nine, are the extracting and honey rooms respectively. A boiler and engine room has been built at the end of the garage.

The cement foundation on all walls rises four inches above the cement floor, which slopes toward the middle of each room, where a bell-trap connects with the sewer. In the garage, is a box trap for washing cars. The floors are all easily washed down with hose and brush after each day's extracting or other mussy work. Hot and cold running water are on tap at the sink, and a six-horse boiler gives steam for extracting, feed making, wax rendering and cleaning.

Upstairs are the office, shower-bath room, carpenter shop, and frame and foundation room. I planned to have also wax room, paint shop, and large storage spaces for made up material and empty honey containers for next season. An attic gives some storage space and an old barn a lot more. The stairs go up beside the middle partition and open from the garage. They are of easy grade for climbing, but no wider than necessary for one person to go up and down. They are not intended for carrying things up, as all material goes through a trap-door in the ceiling over the garage, where material can be handled on and off of trucks.

A large percentage of the outside wall space is glass. This abundance of light relieves the depressing effect which indoor work so often has. The ceilings are nine feet in the clear, and all windows are screened, giving plenty of air.

Routing of supers and machinery in the extracting room needs careful arranging to save loss of time and labour. When they come in, full supers are piled nearest the garage door, in a space reserved for them. Then come two eight-frame markle extractors, with two steam melters beside them. One of the extractors is left-handed, so the operator can stand between them and operate first one, then the other. The honey from each drains into a pump chamber from which it is pumped to the honey room. It is not practical to pipe both extractors to the pump, as the latter will often suck air from one, while the other fills up. The steam melters are built like the Peterson, except that they are boxed and are made stronger to take care of some pressure. The honey from the wax separator which serves both melters, runs through a pipe to a strainer in one end of the pump chamber. Although slightly discoloured, this honey when thoroughly mixed with the rest makes no difference in appearance, and, if anything, slightly improves the flavour. Of course, the whole principle of the melter is to shoot the melted honey and wax off the hot surface just as soon as the latter is melted enough for them to separate.

As we have a six-horse boiler for steam to heat the knives, and melt the cappings and warm the honey in the pipe, when it does not want to pump, we thought we might as well go the whole length and install a steam engine to run the two Markle extractors. Have extracted nearly a hundred thousand pounds with it, and prefer it to a gasoline engine. Our steam knives are homemade, having a long blade straight with the handle. The operator must learn to cut downward if that is not his habit already. Otherwise he finds them a great improvement over the short knives with the tiresome crook in the handle. The blade is straight and flat, and using the top and bottom bars of the frames as bearings we soon get our combs flat like boards with the troublesome hollows

ironed out. It takes four men to operate the two extractors. Two active uncappers easily keep them supplied with combs. One man puts combs into the machines and attends to the reversing, stopping and starting, also fires the boiler and acts as engineer to the little steam engine which runs itself so long as you give it steam and oil. The fourth man takes empty combs out of the extractors, returns them to supers and piles them, and keeps the uncappers supplied with full supers.

Our record this year with three first year helpers was to extract five thousand pounds in four hours, or seven thousand five hundred pounds in between six and seven hours running, without over exerting anyone. Of course, four experts would make a much better record, especially if they did not worry too much about having the combs well dried. The three-quarter-inch pump we got from the A. I. Root Co. ten years ago easily raised this more than ten feet and delivered it through an inch pipe to the different tanks in the next room. There is a point about the pump which should not be overlooked. The kind used for water which is similar to a honey pump has a wheel with fine teeth all around its circumference as the main moving part. This would churn the honey terribly and should not be used. The Root pump has only a bronze plunger in the revolving part, and pump men say it should be called a "lift." It is used for pumping oil in some automobiles.

The honey room has tank benches along the middle partition supporting eight tanks, each of 2,500 pounds capacity. Their gates are three feet from the floor to save stooping in filling. The honey pipe runs along the ceiling with a tee for each, which delivers the honey at the bottom of the tank. This assists blending. The tanks have tight-fitting covers to keep out dirt of all kinds. After the honey has stood for at least three days to allow all foreign matter to rise they are carefully skimmed, and after standing a few hours skimmed again. Then the pails are filled. For small containers we have a set of very sensitive balance scales, made especially for filling small containers. With them it is easy for an inexperienced helper to fill pails as fast as another can slip the lids in, and stack them away in the crates, and he need not vary more than half an ounce.

This matter of extracting machinery has been somewhat of a hobby with me for some years. I am not much of an inventor but have watched development with great interest. Take the knife: the first knife was thin and short. The user got his knuckles in the honey, so he bent the handle off at an angle of forty-five degrees. When two right angles were made so the handle was in parallel with the blade, perfection was thought to be reached, and that is what they give you now. But the blade will not reach across a Langstroth comb and several strokes are needed to uncap one side. With unheated knives this was not bad, as it saved the wrist by losing time. Now that steam reduces friction on the comb, we save time by using a longer blade, and this enables us to keep our knuckles out of the honey without the crooked handle. Of course, the point is always used to negotiate the hollows. The bevel broad blade of the Bingham knife was always a detriment, and more so with a steam jacket. Take the extractor. In the American Bee Journal, for May, 1918, I criticised the existing extractors as follows:—

> "All extractors are built for moving about without taking down in any way, and have had to suffer in some points on that account. To make them for permanent installation admits of a complete review of extractor construction with a view to revision. What are the essential parts of an extractor? Among them are baskets for the combs, a reel to whirl them, supports for the reel, a screen to intercept the flying honey, and a reservoir to retain it until drained away. For convenience, hand extractors were built

in a tin can which combined reel support, honey screen and reservoir. Power extractors are built the same way. To overcome vibration caused by uneven loads, the beekeeper nails this can down, and wires it down and sometimes braces it from the ceiling, and it continues to be a *flimsy can which is no proper support for a real machine.*"

I did not know then that Mr. Markle was working on a machine which was to break away from some of these foolish traditions of the extractor. He has given us a valuable improvement by putting the machinery underneath where it belongs, as well as by allowing the combs to be reversed without stopping the reel. We have power sewing machines and power washing machines, all kinds of office machinery run by power, and now a water system arranged so that every time a water tap is opened it starts a motor which pumps you water fresh from the well. Who is going to give us a real power extractor, with built-in electric motor connected with the brake lever so that putting on the brake shuts off the motor, and releasing the brake starts it, or something like that. Then we could run wires instead of line shafts and belts. Whoever makes the first one is to send me one for the idea.

MR. KROUSE: In opening this discussion on the Central Plant *vs.* the Honey House at each outyard, I would say that I think Mr. Pettit has given us a good paper on the central plant, and has also given us some of the advantages that there are in a honey house at each outyard. As you know, I have a honey house at each yard, and I am not very much in favor of a central plant. I am not going to get up here and knock a central plant, because there are a lot of things about it that are really nice and that we cannot get in the other; but there are some things about it that I have not yet been able to see the advantage of.

With the honey house at each yard, and doing your work at each yard, we have all our material at that yard; there is no danger of it becoming mixed up with any other material. If we have foul brood at all, there is no danger of spreading it; and when we go to a yard to do our work, everything we need is right there up until we come to extract; and I think that is a great advantage, when we drive out to a yard, our supers are there and everything we need to work with is there.

With a central plant that is not the case. You have to team your supers around with you, and you may come there with too many or too few. There you have one of the great advantages in having the honey house at each yard and having all your supers there.

When you come to extracting, the central plant appeals in some ways, while in other ways it does not.

I have tried, twice, moving the honey home to extract, and in both those cases I built a honey house at those yards before we got through. I have never been able to get honey away from a yard without having the great trouble which Mr. Pettit spoke about, that is, robbers waiting for us. They were surely around, and I did not like that kind of thing.

There is some advantage in a central honey house in having the honey put into a big tank and left there for two or three days; you get a better blend, because you know that locations differ, even if just a few miles apart.

As far as the work goes, I think we can clean up just as much work with the one system as with the other. The hours of work remain with the people themselves. If they want to work long hours at an out-yard, that is all right. We work long hours in order to get our work done. We could quit at six o'clock and have done a good day's work, but we prefer to work a little longer and do a big day's work and so get through a little sooner. We do not work quite that long. When we are through at night we have our cappings all melted, and our honey all in cans ready for the market, and we bring it home.

Mr. Pettit spoke about it taking so long to set up an extractor and get it started. I admit that the first time you set it up it takes a little longer, because you have to get it lined up; but afterwards all you have to do is to set your machinery on the place which is already marked, and your belts are ready and you can get to work. I can be running in twenty minutes. I think that is just about as quickly as you can do with the central plant. We have no trouble with the belt coming off, because we have the regular stand there for the outfit.

Mr. Smith: I tried the central plant. My trouble was to get the bees out of the supers. I do not know whether the trouble was the fault of my bee-escapes. I used double bee-escapes with the solid board; but I could not get the supers cleaned out in 36 hours.

Mr. Neil: I would like to ask Mr. Pettit why he puts his supers out for the bees to clean them out before he takes them back to the out-yards.

Mr. Pettit: It seems self-evident. You take back a truck-load of 80 or 90 supers all fresh from the extractor, and the bees are inclined to rob. You are going to have bedlam there before you can do much with them, unless you have a way to keep them covered so that the robbers cannot get at them; and anybody who can keep them so that robbers cannot get in is doing more than I can.

We use Porter bee-escapes, and look them over to make sure they are in good shape. We leave them on for 24 hours, but if we find that the weather is cooler or for any other reason they are not working well, we leave them for a couple of days to give them plenty of time to get out. We take inner sugar sacks, and open them up so that they will just nicely cover the tops of the supers, and place the sacking in a pail of water. If robbers are inclined to be bad we use a little crude carbolic acid in the water so as to give it a repellant odor.

After the bee-escapes have been on, we lift the supers off and stack them down the rows, laying a bee-escape board down first, and piling the supers five or six high on it, then lay one of those moist cloths on top of the pile of supers, and place a bee-escape board on top of all, and go through the yard in that way until we have a load off.

If we start loading onto the truck and find supers from which we have to brush bees, it makes a delay; and we wish to avoid trouble with robbers. After the load is ready, one man gets on the truck and the others bring the supers to the truck with wheelbarrow or hand-carrier, as fast as they can, and load them on; and the truck driver cranks up his car and jumps in, or somebody else cranks it and he jumps in and away he goes. The main thing is to get away quickly. As soon as he is on the road, he drives as slowly as he can, with all the supers open; and the bees which have got into the supers fly out, unless we have lifted in young bees, which we do not do as we brush them off. If we have carried home some young bees, we take a basin of cold water and brush the young bees into the water in the morning, and they are chilled; and they are dumped out in the yard in front of a weak nucleus, and they strengthen up some particular nucleus in that way.

Mr. Holtermann: I would like to ask Mr. Pettit where he keeps the supers for the winter.

Mr. Pettit: As far as possible we store them at home. There are four out-yards where there is an old house, and in this we store some supers which are to be used at that yard the next year. When the truck is going to the out-yard for something, a load of supers goes along with it. We seldom have to

send the truck out with a load of supers alone, unless there is something to go for. They are stored in these buildings. If we had room enough in the central building, I think we would keep them there, because we are making enough trips in the early part of the season and can send them back without making unnecessary trips. We pile them so that mice cannot get into the bottom, with a queen-excluder on the top, so that the mice cannot get into the pile. Our building ought to be mice-proof, because super combs ought to be kept free from mice.

MR. HOLTERMANN: I make a point of dividing up these supers as much as possible, so as not to have a considerably larger number in one place than in another, for the reason that if a fire should break out in the place where most of them are stored you sustain a loss of combs that money cannot repair. Just a suggestion along the line of putting on of bee-escapes. We make a point when going through the bees for what we think will be the last time, to cover the super with the cloths which we have. If you adjust your cloth as you are putting on your bee-escape, then the cloth will not be propolized down and there will be great danger of robbing; but if you put on the cloths so that the bees are in the super for a day or two after you finally adjust the cloth, they are absolutely bee-tight.

MR. TILLSON: I understand Mr. Pettit has quite an apiary at his home yard. When he takes the wet supers from the extractor, does he place those supers on the colonies at his yard? Using one of those devices by which supers can be stacked on a square, three or four stacks can be cleaned out by one colony; or does he stack them one on top of another so that the bees can get through any super in the pile?

MR. PETTIT: We stack them right out in the open. As I say, we have very little foul brood, and are watching carefully for it all the time, and do not allow anything from a hive with foul brood to get out. We have a hundred colonies in the home yard, and never set out less than a hundred supers, so that all the bees have something to work at once they get started. We set them down late in the afternoon, around the apiary, and the bees spend the better part of the next day in cleaning out those combs. It does not excite robbing, and does not spread foul brood. We have found this very satisfactory.

MR. WEIR: In connection with the transporting of the wet combs from the central plant to the various yards, we were troubled, as Mr. Pettit mentioned, with the desire of the bees to rob. But we got over that difficulty in this way. In the bottom of the truck, just as we are loading it up, we first put down newspapers, about two sheets deep, so as to keep bees from coming up from underneath; then we put a layer of supers on top of that; then we secured carpets about a foot wider than the truck and a foot longer than the truck, and placed one on top of the first layer of supers; then a single layer of newspapers on top of that; then another row of wet supers; then another tarpaulin, and so on. In that way we had the advantage, when we got to the yard, of being able to roll back our top cover and run it into the little house, which we have bee-tight so that we could get each colony to clean up its own supers. Our tarpaulin is fixed with creosote, which is not attractive to bees. We do not have the difficulty through robbing conditions that we did have when we started.

About the difficulty in transporting the frames to the central plant. When they are full of honey, the chief casualties as to the cracking of lugs happen on frames which are not bound with the metal spacers; so that lately we have been using exclusively the plain end-bars and the metal spacers which envelop

the top bar in a "U" shape so that it does not split, as the others have a tendency to do.

I might also mention that in handling our honey, we prefer to have a small honey house at each yard, smaller than we would require if we were extracting at each yard; we use a honey house built up in sections about 9 x 12. We find it economical in first cost, and it can be placed wherever you want it in the yard, to give protection to your bees; and if you want to take an odd super from a hive, you can run it into this house and get it under cover quickly. It furnishes storage capacity for all the comb belonging to that yard, so that we can keep the combs for each yard separately and keep them divided as regards locality, and meet the point which Mr. Holtermann has raised regarding the possibility of loss from fire.

Mr. Jones: I would like to ask Mr. Pettit if he is troubled from bees when taking his honey? We know that when bees rob the comb structure is pretty well broken up. What does Mr. Pettit do?

Mr. Pettit: There are only two conditions under which we have combs torn up by bees when cleaning them out. If the boys are a little careless in spacing out the frames, when setting out the supers, the bees chew their way through, and they are very apt to spoil the midrib. Or, if there is any granulated honey, the bees are practically sure to make a hole.

The President: If Mr. Pettit used the shallow ended frame he would not have that trouble.

Mr. Pettit: We use the deep end frames.

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## HONEY SALES PROMOTION.

Harry W. Jones, Bedford, Que.

To begin with, I would point out that fact which some of us have seen grow increasingly apparent in the past three or four years. We have studied methods and developed machinery and have failed to develop fresh markets or organizations to absorb that surplus output that the employment of modern methods was bringing to us. In some ways it has not been so much a case of over-development or over-production as it has been a lack of proper distribution. A few places were made the targets for the bulk of the crop, and in districts outside of those places honey was actually difficult to procure six weeks after the crop had been taken off the hives. Other places were not even "sticky," and honey was being shipped out from the larger centres to supply these points. Any beekeeping organization is made up of individual units, the beekeepers themselves; and each and every one is interested in producing as much honey as possible and in getting as high a return for what is obtained as is consistent with fair dealing and honest reward for skill and material employed. I understand that the actual formation of a central body to handle honey sales is still in progress of growth, but the time has certainly come, I believe, when wider markets should be looked out for. Production, even in average years, is getting high enough to almost balance the domestic demand; and with the progress that is being made along the lines of commercial beekeeping, I see no reason to doubt that, if the proper organization is brought about, a good healthy export trade can be looked forward to. There is an abundance of cheap, tropical honeys of low grade, not suitable for table consumption, sold in the great market places of the world. Canadian beekeepers do not have to face competition

from that source, however, as only high-class honeys are produced in this country, and with the proper facilities of reaching those markets, Canadian honey can vie successfully with those from Australia, California and New Zealand, for premier place. Foreign shipping and export is a matter for handling through an organization rather than by individual effort, and it is here that the association is of the greatest importance. However, in this paper I have looked at the matter of improving the local distribution, and so cannot enlarge unduly on the other angle of the question.

We all know that in order to get the very best price for an article we have to produce the very best; so that, in trying to build up a market, we should begin by trying to produce the very best grade of honey possible. In the production of extracted honey, a beekeeper should not use any combs in the extracting supers that have previously had much brood reared in them. The reason for this is that the brood combs are dark colored, and it follows that they have a tendency to color the honey and turn it dark as well. We all know that it is very important to have honey that is as light colored as possible, and for this reason we should only use combs for producing honey that are bright and light colored. When not on the hives, these extracting combs should be piled up in the supers and kept covered up so that they will not become dusty. Where beekeepers are located in a district where there are flowers of different varieties yielding honey of different quality and color, they need to be careful and keep the dark honey separate from the light honey, as far as possible. This can be accomplished by either extracting the light honey from the combs as soon as the dark honey begins to come into the hives; or a better way is to have enough extra combs so that these can be put on for the bees to fill while the light honey is being extracted. By having some extra combs one does not have to work so hard all at one time, and these empty combs can be returned to the bees to be filled later, if necessary.

One of the very important things about extracted honey is to be sure that it is thick and well ripened. One gallon of extracted honey should weigh about 14¼ lbs., to have it well ripened and of good thick consistency. Undoubtedly the best way to ripen honey is by leaving it on the hives to be ripened by the bees themselves; but this is not always possible, and in this case honey should be left in tanks to evaporate until it is thick enough. What would otherwise be first quality honey is sometimes ruined by being extracted while it is thin and watery, which causes it to ferment after it has been put into pails. This makes a very dirty, nasty-looking object, and, besides, the contents are good for nothing except to make vinegar out of. Anyone purchasing a pail of honey like that may not be blamed if they refuse to buy any more. Beekeepers should be careful, therefore, to make sure that the honey is well ripened and thick when they sell it, if they expect to build up a good trade. Before honey is put into tins or glasses for sale, it should be carefully strained through a fine mesh wire cloth strainer or a piece of coarse cheesecloth. This is necessary to take out all the small pieces of comb and dead bees and particles of pollen that get into the honey as it is being extracted; and it is easier and better to strain the honey than to try and skim it off after it has been put into glasses or tins. Care should be exercised in grading honey, especially comb honey, as this is generally sold by the dozen in a case, and the outside looks of the honey in the case is accepted as an indication of what the contents are like. Extracted honey should be carefully graded as well; if it is to be sold as light honey, there should not be any dark honey mixed with it.

Now, as to selling honey. All of us, when we have a good season and get

a large crop, have to answer the question, "Where am I going to sell this honey?" We can classify our markets as follows: 1st, Our home market, that is right around us where we live; 2nd, The city market, where we have to ship the honey to sell it to a storekeeper or commission merchant, who in turn sells to somebody else; 3rd, The export market to foreign countries. In order not to tire you by talking too much, I will confine my discussion to the possibilities of our home and city markets. We all know that if we can sell our products directly to the consumer we will receive the most money and profit. This home market, that is to say, the people who live right around us and in the nearby towns and villages, within a radius of twenty or thirty miles, are a very easy class of customers to hold, once they know that a beekeeper is producing honey and that they can get it from him year after year. They will depend on him for their supply, and, so long as the beekeeper can fulfil their wants, he will keep their trade. It takes some work at first to get into touch with people, and to let them know that the beekeeper is prepared to supply their needs for honey; but he will be well paid for this work by the extra price that he receives for his honey, compared with what he would receive if selling it all off at a wholesale price, as one has to do when selling through commission merchants and wholesalers; also, he will, in some measure, guard against disease in his district by preventing the sale of honey from other sources that may contain disease germs.

There are various ways in which a beekeeper can establish himself in his home market. Probably the best way is to take a light wagon or an automobile, and go over the country on all the well settled roads, taking honey in pails of assorted sizes, and at the same time take along three or four hundred pounds of honey in bulk in a big can. Stopping at every house, as he goes along, he can state that he has honey for sale, the size of the package in which it is packed, and also that he is ready to sell the honey in bulk at so much a pound, and that he will put the honey right into the customer's receptacle on the spot. At times people do not wish to buy in packages, when they already have pails or jars handy that honey can be poured right into; and when they find that they can have whatever quantity they require, they will sometimes take 25 or 50 lbs. at once. The beekeeper should carry with him some printed cards with his name, address, telephone number, the kind of honey that he has to sell, and how it is packed for sale. In canvassing in a town for customers, it is best to go from house to house. Quite often people will not care to buy at the moment, and in this case always leave a card so that they can remember where to get in touch with you, if they should want honey in the future. Another thing to remember is that the people in the towns, as a rule, will buy the small sized packages rather than the larger sized containers. Glass jars holding a pint or a quart, or the tin packages holding 2½ or 5 lbs., will sell better than the large sized packages. If people do not wish to buy, one can leave a small sample in a saucer or cup, pouring it out of a pail brought along specially for the purpose. Oftentimes they will send an order for honey later, when they find out how good it is.

Once people have got in the habit of buying the honey from him, the beekeeper will find that his market will grow, as the information spreads about, that honey can be obtained direct from him, and that the quality is first-class. Comb honey can be sold in the same way; and it is to be noted that comb honey will sell better, as a rule, in the towns than in the country. People who live in towns do not always have an easy way of getting to where the beekeeper lives; and for that reason, it is better for him to arrange to make regular trips, once

every two weeks, say, with supplies of honey. His customers in the towns can telephone or write him, and he can deliver the honey on his next trip. On the other hand, people living in the country always have a horse or an automobile, and so can get around to the beekeepers' house when they want more.

One very important item should not be overlooked, and that is that every package of honey, either in tin or in glass, should bear the name and address of the beekeeper on the package. Comb honey can be stamped with a rubber stamp on the wood. In this way, the person who buys the honey always knows who produces it, and, if they like it, they know where they can get more. When you are trying to build up a market, never sell your honey in any shape unless you have your name and address on the package to show where it comes from so that the consumer knows where more can be obtained when required.

There is another way in which the sale of honey in the local towns around us can be taken care of, more particularly if the towns are at some distance from the beekeeper's apiary, that is by selling at a somewhat lower price to the provision dealers, and for them to sell in turn to their patrons. There are two ways in which this can be arranged. The first and best way is to sell them what they will buy and get cash from them at once in return for the honey, then follow up the first sale by coming around at regular intervals to be sure that they do not lack for further stock before they are entirely sold out. There is another method which is very successful, and which I have seen tried out with good results. That is for the beekeeper to arrange with the storekeepers for them to carry an assorted stock of his honey in cans or glass jars, with the understanding that they sell his honey only and that they will give it a prominent display on their shelves and in their windows. A minimum price is agreed upon below which the honey shall not be sold, and at this minimum price the beekeeper agrees to keep the storekeeper supplied with honey and to pay him a commission on all that he can sell. The beekeeper should keep a careful reckoning of all the honey that he supplies the storekeeper with, and payment is made every two weeks, or as often as may be arranged upon.

The better arrangement is to sell for cash outright; but, on the other hand, if the beekeeper has a fairly large crop to dispose of, it is a good advertisement for the public to see one particular beekeeper's honey in all the stores, prominently displayed; and at the same time, the beekeeper gets the benefit of a large share of all the honey sales that are made in that particular town.

Another way of selling a honey crop at retail is by putting a small advertisement in the big city newspapers; a small notice costing around a dollar will be sufficient. The advertisement should state that pails or jars of honey can be supplied at such a price; and the honey can be shipped by express as the orders are received. In thus selling his honey by retail, the beekeeper should keep on hand enough of his crop to supply possible orders that he may get from October to February or March. In this way a steady business can be built up.

In our country, the best market for honey is during the winter months up until spring when maple sugar and syrup come on the market; and beekeepers who are supplying a retail market should endeavor to carry enough stock to supply customers the greater part of the winter months. If he should sell out his stock and still have calls for honey, it is possible to buy honey from some other beekeeper at a distance to supply orders with, and I wish to stress this point, aside from all other reasons: It is better to keep the selling price up so as to allow a reasonable margin of profit at all times; then if it becomes necessary to buy honey to fill orders with, it can always be done at a profit.

There may be beekeepers who say that they have not got the time to sell honey in this way. In reply, it may be pointed out that after such a market is established, it will grow and need very little further attention, so long as the beekeeper can furnish what honey is called for. The difference between what the honey sells for in a wholesale way and the price that it can be retailed for, pays the beekeeper extremely well for the extra time and effort required to develop it.

On the other hand, we have to consider the case of the honey producer who wishes to sell his honey at wholesale in order to get rid of his crop and turn it into money as soon as possible, and who has not got the time or the inclination to sell his crop otherwise. The first thing to do is to decide what size of package he needs to put his crop into, and what price he would have to get to allow a reasonable profit. He should first visit the large city markets and find out exactly what kind of package is most desired, and the approximate price of honey. He can take a sample of honey with him, and should visit the merchants who sell on commission, the large stores that sell all kinds of food, and the packing houses that buy honey to bottle and sell again. After deciding where the honey is to be sold, a definite understanding should be agreed upon, as to the price, if the purchaser is to pay the freight charges, when shipment is to be made, and when payment is to be made. In this way, business is done with satisfaction to all concerned, and both parties look forward to doing further business. There are times when the beekeeper does not know if the party who wishes to buy his honey is entirely reliable or not, and in these circumstances he can always go to his banker and ask him to make inquiries to ascertain if the party is perfectly reliable or not and has a good reputation for paying his debts.

Never ship your season's crop of honey to anybody unless you are perfectly satisfied of their ability to pay you honestly and promptly for your crop, which represents the result of your labours for five or six months with your bees.

There is another very important item to be remembered in selling in a wholesale market, do not be in so great a hurry to sell that you are willing to accept a cent or so less than a price that your Association recommends. The mere fact that you do sell at considerably less than the price proposed makes it very hard for another beekeeper to sell his crop in the same market as the buyers soon learn that honey is being sold at less than what they would otherwise expect to pay.

Just before I close, possibly a word or two about what has been done down in Quebec may be of interest to this gathering; as they have done some work along the lines of co-operative marketing down there. We have the reputation for being a little bit slow down in Quebec; but in the line of selling honey, I think we are swinging in the line fairly well. Back in 1920, the Beekeeping Branch of the Department of Agriculture in Quebec decided to undertake in a small way the selling of honey. They invited a limited number of producers to associate themselves with the Department for the sake of trying out the market. I do not know exactly the number of beekeepers who came in, but I think that they had some 250 beekeepers to start with. That insured that they would get a supply of honey to make their preliminary effort with.

The method of procedure was something like this: The beekeeper has a honey grader (I was intending to bring one up with me, but did not have time to get it before leaving the office) with four grades covering the range we have. The beekeeper was required strictly to follow these grades. In the

case of overseas markets the honey was packed in packages to suit the market. The Provincial Department of Agriculture, through its Beekeeping Branch, guaranteed the quality. I do not know how the sales were arranged the first year, but I think they sent a man over and sold it in England, and some in Belgium, and some in France.

In the year 1922, the season just closed, the honey crop in Quebec has been estimated at about 3,000,000 pounds. They have, in common with the people of Ontario, Farmers' Co-operative Clubs. They have a central selling office, known as the Central Co-operative, in Montreal; and they market their city honey sales through that Central Co-operative, in Montreal. For provincial sales they pack their honey, part of it in one pound glass jars. All of it is sold under the label of the Federation, which is called the Beekeepers' Federation; and the label has a space for a distinguishing mark, so that all shipments can be traced back to the point from which they originate. The honey is put up in pound jars, and 2½, 5, 10, and 30 pound tins. To cover the expense of doing business—and there is always an expense of doing business, even when it is being done through the Government—for advertising and management, they make an assessment of one-half cent a pound. They have been running this now for three years, and the beekeepers do not make any complaint; the plan seems to have functioned well, and those participating in its advantages seem to be well satisfied. They have gone at it slowly, but seem to be accomplishing what they set out to do. We have another beekeeper from Quebec, Mr. Wooleys, who can probably give us an idea of what the extracted honey is going for now.

MR. WOOLEYS: A good deal of it has been sold at eight cents a pound.

MR. HOLTERMANN: I would like to ask Mr. Jones if it is not so that within the last three years the Quebec Beekeepers' Association passed a resolution deciding that they were all to put up their honey in 30 lb. tins?

MR. JONES: I have not any knowledge of such a resolution; but, on the face of it, I would think that would not be so, because it is a rather arbitrary decision, to say the least.

MR. HOLTERMANN: I have been in Quebec time and again, and have gone through the wholesale houses, and they had not the least knowledge of my being a beekeeper. I have examined honey there, and they told me that they had come to the conclusion to put all their honey into 30 lb. tins, and I found that to be the practice on the Montreal market. I laughed at them, and told them that a 30-lb. package was too small for wholesale, and too large for retail use.

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## WHAT THE ASSOCIATION HAS ACCOMPLISHED THIS YEAR

F. ERIC MILLEN, SECRETARY-TREASURER.

Commencing early in the season the executive decided to purchase honey cans for the members. The Association has supplied to members 566,374 honey pails, in sizes and savings as follows:

60 lb. size, 6,746 cans purchased.
Members saved .06½ on each can (24 in crate).
" " .10 " " " ( 1 in crate).
" " .16 " " " (crate of 2 cans in crate).
Members saved $539.68.
30 lb. size, 1,966 cans purchased.
Members saved .095 cents on each can.
Members saved $186.77.

2½ lb. size lithographed, 38,729 cans purchased.
Members saved $1.80 on every hundred cans.
Members saved $697.12.
5 lb. size lithographed, 316,483 cans purchased.
Members saved $2.25 on every hundred cans.
Members saved $7,120.86.
10 lb. size lithographed, 143,705 cans purchased.
Members saved $2.50 on every hundred cans.
Members saved $3,592.62.
2½ lb. size, plain and gold lacquered, 3,650 cans purchased.
Members saved $1. on every hundred cans.
Members saved $36.50.
5 lb. size, plain and gold lacquered, 31,270 cans purchased.
Members saved $1.15 on every hundred cans.
Members saved $359.60.
10 lb. size, plain and gold lacquered, 23,285 cans purchased.
Members saved $1.25 on every hundred cans.
Members saved $297.81.
Members saved $75.03 on re-shipping crates.
On the cans purchased, the members of the association saved $12,905.99.

The members of the Association and the beekeepers in the Province also saved, probably, an equal amount on their cans because of the fact that when the Association purchased containers, the competitors reduced their prices to practically the same as the Association was getting, so that all beekeepers who purchased cans either through the Association or directly from the manufacturer, also saved an amount in like percentage as the members saved by purchasing through the Association. This big saving does not show in the figures I have given above.

The Association also introduced the lacquered inside and out honey pail, and the lithographed, lacquered inside pail. We believe this has been a good move, because, apparently, the lacquered inside prevents the chemical action of the honey, air and tin, so that in case of lacquered inside containers, there is an absence of the black rim around the top of the pail at the edge of the honey. Liquid honey is also improved in appearance by the use of the lacquered inside honey pails.

We have here two cans, one of which is lacquered inside, and we find that the honey in it has a nice and clear appearance on top, and shows the absence of the black or rusty rim at the honey line which is found inside a container which is plain on the inside. This other can is plain inside. It does not make any difference who makes the can, after honey has been inside a plain can for a week or two up to a few months we will find a black rim appearing around the top of the honey, against the can, due, as has been said, to the chemical action of the honey and air on the can. That black rim spoils the look of the honey and somewhat affects the flavor; but it is entirely absent in the lacquered can.

I believe the Association did a good thing introducing the lacquered inside pail. We thought we had done this for the first time, but one of our members here introduced this principle some years ago, but for some reason it fell out of use and cans were not lacquered inside. Another move which was of benefit to quite a degree was that we advised beekeepers not to purchase a plain pail for honey, but if they thought they did not want a lithographed pail, at least to purchase a lacquered pail, inside and out. The members generally accepted the advice of the executive, and we sold very few plain pails this year. We know that after the plain honey pail is sold, unless there is a label enclosing the whole of the pail, directly the can gets inside the grocer's store a little dampness will gather upon it and rust will begin, which makes the public turn against

the package. The appearance of the can on the outside is not conducive to the purchase of the honey.

This past season the Association purchased 1878 three frame nuclei and 293 packages of bees for members. The reports received on the nuclei are as follows:—

1. Number of Colonies, 995.
2. Condition on arrival:
   - (a) Strong..... 731
   - (b) Weak..... 183
   - (c) Dead..... 19
3. Honey produced this year from nuclei and packages:
   - (a) Light..... 66,249 lbs.
   - (b) Dark..... 25,175 lbs.
4. Increase made during the season, 82.
5. Disease reported:
   - (a) American Foul Brood..... 3
   - (b) European Foul Brood..... 2

I may say, as far as the American Foul Brood is concerned it was already present in the vicinity, and there is no proof that it was at all brought in by the bees.

6. Present condition of colonies:
   - (a) Strong..... 981
   - (b) Weak..... 14
7. Queens missing, on arrival or shortly after arrival, 104.
8. Queens superseded during the season, 255.
9. Was the purchase a success financially?
   - (a) Yes..... 45
   - (b) No..... 8
10. Would you purchase bees next spring? 28 answered yes.
11. The number of reports received was 53.

Generally speaking, the first car of nuclei was a good investment for the members, and the reports received refer rather to the first car. From the experience we have secured this past season, we know that in future shipments we can protect our members to the point where, if the season in Ontario is satisfactory, package bees and nuclei can be profitably purchased.

The Association also purchased $7,238.48 of bee supplies and comb foundation, and saved the members a total of $904.81. The purchase of supplies and foundation was not pushed in any way, as we were afraid that if we really went out to secure business we should find that we could not handle the business that might develop. As it was, it would not have been possible for the office to have cared for the volume of business done, without the whole-hearted co-operation of everyone in the Department.

If co-operation carries, the Co-operative Association should make special efforts to have the members purchase their supplies in the fall and early winter, at the time the honey crop is sold. I believe we could make a considerable saving, by reducing the overhead of the manufacturer, if we could get our supplies purchased earlier in the season, instead of leaving their purchase until the time when the beekeepers are ready to use them.

This year the Association purchased 2,658 queens for members. Last year 1,353 were purchased. The Department now has an apiary of sixty colonies at the Ridgetown Experimental Farm, and these have all been re-queened

from two breeding queens, kindly given by C. B. Gooderham, Dominion Apiarist. These queens were Duck Island queens raised by the late F. W. Sladen. The apiaries in the vicinity of Ridgetown have also been re-queened, and next season queens should be produced and sold from this apiary. Quality rather than numbers, will be the aim of the Department.

Members saved a total of $13,810.80 on containers and supplies. This does not include, as I said, the amount saved by other members because of Association prices.

The last record of the Association, this year, deals with memberships. We are pleased to state that there are now 1,463 paid up members of the Association. I might state that since we have been at this Convention, several secretaries tell me that they have quite a few members on hand; so that I think we might say that the membership is now around 1,500. That is an increase of between 300 and 400. The former record was in 1913, when the membership of the Association was 1,404; and up to that time that was the highest point at which the paid up membership of the Associations stood.

As the secretary's office was working on an exceedingly slim margin, the treasury of the Association will be just about empty, when final refunds are made. We found it impossible to get these refunds out before this Convention.

As lectures are now over until the new year, we expect to send members any refund due them within the course of a week or so. Members should not look for too large a refund. The secretary wishes to thank the members for their patience with the office during the year. We made some mistakes, but in all instances tried to give the members a square deal. For several months during the summer we received about a hundred letters a day, and, as we never anticipated the volume of business which finally materialized, it kept us very busy to keep things in order.

We believe that the amount of business done this year augurs well for the possibility of a successful co-operative organization being started by the beekeepers of Ontario.

Any manufacturer will tell you that you can always secure a closer price by buying in large quantities and through one organization. We must now leave it for the members to decide upon the future.

I might add that we have had a surprisingly large number of letters, resolutions, and reports from beekeepers in Ontario, apparently, favoring the idea of co-operation. We sent out a circular asking the beekeepers to report to us whether they were actually in favor of co-operation. From those we have received 445 replies. The number of colonies owned by the beekeepers who reported were 36,092. The total honey crop which was reported by those Beekeepers was 3,772,006 lbs., made up of 2,894,250 lbs. of light honey and 838,810 lbs. of dark honey, and 38,946 lbs. of comb honey.

Of the number of replies received, 443 were in favor of co-operation, and 2 were against. Of course we must take it for granted that a number of beekeepers who were against co-operation did not send reports; and we must also take it for granted, as I know there are, a large number have failed to send in reports who are in favor of co-operation. This question will be discussed today, and it is a vital one. From the experience we have had at Guelph this year, we know that the more we look into the business and its possibilities the more it means to the beekeepers of Ontario.

We know there are difficulties. If we can start off in a small way—we certainly do not want to become too ambitious at the start—I for one believe

that the beekeepers of Ontario can form a co-operative organization which can be made a success.

In the past, we have heard a number of beekeepers tell us that we have over-production; but we really know absolutely nothing about the markets for honey. How much have we advertised our product? We have never advertised it in any degree worth mentioning. The public, as a general thing, knows nothing about the food value of honey; and we know that the first lesson which any salesman has to learn, when he goes out on the road to sell goods, is to have faith in the goods he sells. Apparently, the beekeepers have not faith in the honey which they produce, judging from the way the marketing has been conducted in the past.

This question is entirely up to the beekeepers here today. We should look at this question from all sides. We want to have all the discussion we can; and if we go at it in the right spirit, I believe the beekeepers will decide to go ahead.

Mr. White, of the White Packing Company, from a wholesaler's standpoint, spoke warningly of the purposed co-operative action, dwelling upon the cost of warehousing, salesmen, and other necessary equipment, and added:

I have been struck, in handling honey, with the lack of proper appreciation by the ordinary householder of the food value of honey. I do not believe that one family in ten eat honey at all; and it seems to me that if a survey were taken of a certain section in the city and enquiries were made from house to house to find out whether the people are or not using your product, steps might be taken to induce them to do so. You know that honey has a very much larger place on its merits, on the breakfast table, than it has at present taken. We find that people are importing marmalades and fruits from other countries, when it would be of very great benefit to them to put honey in their place. I think it can be put there. You can easily get demonstrations in store windows, and that sort of thing.

MR. WEIR: What particular difficulties have you found in connection with the handling of honey? For instance, in buying, have you had any trouble with the grading?

MR. WHITE: Not particularly. Honey is only in two grades, light or dark. We pass anything we can as light honey—anything that the people will stand for. That is about the size of it. If it cannot be sold as light honey, then we have to sell it as dark honey, which is looked upon as second grade honey.

MR. NEIL: What do you find to be the most popular honey?

MR. WHITE: In the cities, it differs in the various localities. In the country, the larger container is all right; but in the city, it seems that the smaller the container, the more easily it is sold. There is a considerable quantity sold in glass. I do not really know the proportion, but I estimate roughly that probably about twenty-five per cent is sold in glass.

MR. HOLTERMANN: It has been charged that the wholesale houses seek to depress the market, and that afterwards they get the big price on what they have secured.

MR. WHITE: Well, that sounds all right; I wish we could.

MR. NEIL: Supposing you could get honey in glass containers guaranteed not to crystallize, would there be a good market for that?

MR. WHITE: Yes.

MR. MILLEN: Mr. White has touched upon one or two difficulties which we have seen, and I would like to ask whether it would be better for the whole-

salers to feel sure that honey would be sold at a fair price which would be fairly definite, than the way the situation is at the present time.

MR. WHITE: I would very much rather have a cent a pound as a fair return, provided we knew that no one else would come in and undercut us. At the present time, I would be very glad to make any person a present of $100 if they would take my honey off my hands at what it cost us.

MR. HOWE: In the States we have the people educated to want liquid honey; and you would rather have honey to retail in liquid form. Cannot you use pint cans and jelly tumblers?

MR. WHITE: The best seller here is the twelve ounce jar, which sells at about 25 cents.

MR. HOWE: And I am told that the large pails go all right in Canada today.

MR. WHITE: Yes.

MR. MILLEN: The two most successful co-operative organizations in the United States today, so far as beekeepers are concerned, are the Colorado and the Texas Honey Producers Association; and both those Associations are doing practically the whole of their wholesale business through the regular channels of trade; and I can readily appreciate that if we attempt to start from the top, by building large warehouses and having an enormous staff and an expensive force, it would not be possible to make a co-operative enterprise a success. But if we can start at the bottom and take advantage of the regular channels of trade, I feel satisfied that the wholesale and retail trade would be pleased to sell more honey, especially if the Association works in co-operation with them in an advertising campaign; because, as Mr. White says, probably not more than one family in ten knows about honey; and that probably means that not one family in ten eats honey.

We have heard, over and over again, the story about raisins. If you are the possessor of a family, you know the story, that raisins contain iron. Even in a small city like Guelph, of about 20,000 people, we have a large bill-board put up by the raisin people! How much have we as beekeepers ever spent on advertising? We cannot blame the wholesale houses, because they know that today they might pay 14 cents a pound for honey, and tomorrow their competitor might be able to buy honey for 12 cents.

MR. HOLTERMANN: I might say that I have gone to a good many wholesale houses, and they are absolutely unanimous in the statement that they would much perfer to have prices stabilized and know what they are doing, than to go on under present conditions.

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## REGISTRATION OF BEEKEEPERS.

GEO. NEIL, TARA.

We have been misunderstanding one another, occasionally. Some of the county associations have been asking for licensing of beekeepers. Others have been asking for the registration of beekeepers. I think they are practically the one thing. They mean that everybody's name has to be registered with the Department, whether it is under license or under registration. And, if everybody's name was in the hands of the Secretary of the Beekeepers' Association, we would know where the bees are. At present we do not.

The registration of beekeepers or licensing of beekeepers is a subject that has been under discussion among beekeepers for some time. All new regulations

have their good features as well as their poor ones. It is not my intention to give all their advantages that could be secured under compulsory registration or license,

In the first place, it is necessary to secure funds to carry on sufficient apiary inspection, apart from what we are annually granted by the Provincial Legislature. We are continually asking for increased grants, but we never hear anything about the beekeepers helping in this work. To say the least, it is selfish on our part to continually ask for increased funds, sit down thinking we have done our duty. Every organization should have some method of securing needed funds for necessary work.

We are in need of compulsory registration or license of every beekeeper in the Province of Ontario, whether large or small; also of fees sufficient to put our business on a more self-supporting basis. Surely, as honey producers, we do not expect our business to continue to prosper by living on charity. We are told that as we give we will be repaid. Compulsory license or registration is the only remedy in sight at present.

Under License or registration it would be necessary to have rules and regulations which we would have to live up to in order to secure a permit to keep bees. If we neglected to give our apiary necessary attention, to keep disease in check, our permit would be suspended; and, unless we got busy and put things in proper condition, our permit would be cancelled and we would be compelled to go out of beekeeping and cease to be a source of infection to all other beekeepers in our vicinity. Many of us know the danger of infection, to our sorrow.

Under license or registration, we would do away with a large number of supposed-to-be-beekeepers, who have bees in nail kegs, or in a piece of hollow log which they secured from the bush; or, as in one place I visited, the lady had about ten colonies in boxes, the most of them in comfort soap boxes turned upside down, the bees going through the hand hole in one end of the box. When asked if she ever had any notion of transferring them to moveable frame hives, she was very indignant.

Under license, we would also get in touch with a large number of beekeepers, who, at present, are not members of any association, and do not subscribe to any bee journal, and, not being in touch with the honey situation or conditions, appear not to have any idea of the value of their product. When extracting time comes, their main thought is to get rid of it at once at any price they can get. This puts selling honey at a fair price out of the question, anywhere near where this condition prevails. Generally speaking it is more common among beekeepers who have but a few hives and give them no attention to speak of, having practically nothing invested. When we are favoured with a good honey yield, as we were this season, they think they have a gold mine.

Mr. Neil: As matters stand at present, there may be many beekeepers in a small way of whom we would never learn. If they were registered with the department every one of them would be known. Some beekeepers in our county have, perhaps, half a dozen colonies of bees—very little invested—and they think it is nobody's business but their own; and in a year like the present they just go around and sell their honey for a cent or two a pound less than the market price. And that, as far as I can find out, is a similar condition to that which prevails all over the Province.

There is no use in trying to avoid the conditions that prevail in the province of Ontario at present. It is up to us to do something and get every beekeeper in the Province under registration or license. This should be compulsory, and

the beekeeper should be liable to have his bees destroyed unless he registers and lives up to regulations, or be subject to a good heavy fine. We should have fees sufficiently large to enable us to carry on proper inspection work. Present conditions are that we have not enough funds to look after any but really bad conditions. I feel quite certain that with the exception of one or two special cases, there has not been an Inspector in our county to do his work.

Another place where, without registration or license, we have no control, is of those persons who are offering nuclei or colonies for sale. They should be furnished with a special registration or license card and have every shipment inspected and stamped as being free from disease before shipment is made, and their apiaries should be kept under close inspection. At present they are examined only when the department receives a complaint from someone.

It is not for me, but for you as members of the Ontario Beekeepers' Association, to say what is necessary to improve the present conditions. We must try to do our part and not expect the Government to do it all. It is not uncommon for Stockbreeders' Associations to put up dollar for dollar in prizes given in certain classes that they, as an Association, consider would be of special value to them as an Association. And I was quite pleased to hear Mr. Gooderham state that the Nova Scotia Fruitgrower's Association when they did not get enough money from the department to provide for proper inspection, paid a small fee to help out.

Another strong point in favour of registration or license is, that where there has been disease which, of course, is cleaned up before disposing of his colonies, the registration number would be transferred to the buyer. Under registration or license those bees could be kept track of by the department to see that they are kept clean.

In this manner the department would be able to keep track of colonies, see that they are properly looked after. We are all aware that, at present, as soon as some beekeeper suspects disease he sells out very cheaply, to all appearance, to some unsuspecting victim who does not find out until the next season, when it is too late, that the bees are diseased. Under license or registration those bees would have to have a clean bill of health before the owner could offer them for sale.

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## HONEY FOR MOTOR CAR RADIATORS.

Mr. J. H. Sprout of New York state said: In regard to honey for the car radiator, all I can say is that I have used it for seven or eight years. I began using it on a Ford, and have used it for several years without having had it freeze. I used a solution of about fifty-fifty. I usually keep a can out of doors and watch it to see if it will freeze; but I have never had it freeze, although I have had it get slushy. I have used it in a Dodge car four years. If the gasket from the cylinders leaks, you will have trouble, because the mixture will get down in the cylinder. Mr. Howard Myers had a bit of trouble at one time, but after he got the leak stopped it was all right. He bought a new Oldsmobile last year, and he is using the mixture in that. Several around Lockport are using it and I think it is all right. I always used the cheaper honey. This year I mixed it fifty-fifty, by measure, but I think that is a little strong. Mix it and keep some out where you can watch it to see whether it freezes. The way I came to find out about this was by having a five gallon can in a shop upstairs on the farm, and I went upstairs sometime in January after we had

had several days of zero weather during which there had not been a fire in the shop. I examined the can and noticed that the contents were not frozen; I wondered why it had not frozen, and thought I would try to use it in the radiator.

MR. MILLEN: What has been the lowest temperature that your car has been in with the honey and water in the radiator?

MR. SPROUT: I do not know. One morning, a year ago, I started out from the farm when the thermometer was about five or six degrees below zero, with a stinging easterly wind. I went in and cranked the engine and backed the car out. When I got out about half way out of the farm, I thought my engine was getting a little hot, and I stopped and found that it was. The air was so cold that the mixture had not started to circulate. If I had let my engine run for a few minutes in the barn, it would have been all right and there would have been no trouble. That was probably as cold as we have ever had. I have never had it become scaly, although it would get a little slushy. The mixture will leak out where water will not, around your rubber hose; but it will not injure the hose or the radiator.

MR. DUNN: I think we are getting very valuable information. Mr. Sprout is, I think, the first man who used it. We are using it in three cars at home and are not at all afraid of it freezing. It takes about fifteen pounds in a Ford and about ten and a half pounds in an Oldsmobile.

In western New York I hear dark honey is going very rapidly for radiators. I forget how many sixty pound tins Mr. Demuth has sold, but I have heard the dark honey in western New York is pretty well cleaned up for use in automobiles. This is valuable information for car owners, and is a great thing for beekeepers who would be able to sell for this purpose honey which they would not care to sell otherwise.

MR. HOLTERMANN: Would honey dew do?

MR. DUNN: I do not know whether honey dew will do or not. Prof. Wilson of Cornell University, thinks that the darker honey is the better because it has certain additional constituents, one of which is an anti-rust. Water has a boiling point of 212 degrees at a certain altitude; at the same altitude honey has a boiling point of 245 degrees. It is very much superior to alcohol, and does not evaporate as alcohol does.

A MEMBER: A gentleman at Beaverton told me that he had been using buckwheat honey in his radiator right along; fifteen pounds is what he had used. It seems to me that this is opening up a wonderful market, by the amount of alcohol some of these men can get rid of.

MR. DEMUTH: Sugar syrup or sucrose contains a large amount of moisture. When bees work upon the sugar they break the molecules in two; and, strange as it may seem, the freezing point is depressed according to the number of molecules which you put in. In other words, a little over half of the sugar content when honey is used will depress the freezing point as far as double that amount of sugar or ordinary sugar syrup. In other words sugar syrup would have to be at double the strength of honey syrup.

THE CHAIRMAN: We have a market already established for our dark honey, through Mr. Sprout's address. Prof. Crandall, of Connecticut, can probably give us some ideas by means of which we shall be able to dispose of all our other honey.

PROF. CRANDALL: One of our best beekeepers, whom many of you know, has developed a market in candied honey, which he calls "Honey Butter," which is a very good product. He claims that it is forty per cent. sumac

honey and sixty per cent. clover. I think, perhaps, you could make it out of all clover. We do not get enough clover honey in Connecticut. When the honey begins to crystalize in a bowl, he has it in a large container so that he can stir it with a paddle, and he gets a very fine grain crystalline product, which is fully as smooth as fondant made out of sugar. This makes a very fine confection. He sells it in square cardboard containers, and has a good market for it. That might help out with your white honey to some extent. The market in the United States is not good for crystalline honey. We cannot sell it ordinarily; but he sells several tons of this every year and gets a good price for it.

I might give you a little about our registration law. I think Connecticut has the only bee registration law in the United States, and it has been working now for three years, and I can give you a little regarding it. The law provides that every keeper of bees, whether of one colony or more, must register with his own Town Clerk every year before the first day of October, and a failure to do so costs him five dollars in a fine. That looks good on the face of it, but we find in practice that many beekeepers do not register. The first year they did very well. The second year perhaps ten per cent. registered. They got an idea that if they registered once they were always registered. A good many of them will not register and would pay a fine rather than do so. The trouble is in enforcing the law. The political forces do not seem to be interested in enforcing the law, because they might not get so many votes. The State Inspectors do not like to enforce the law, because they have enough to enforce with beekeepers any way. So that the law is not enforced. We tried to get the Attorney General of the State to do something about it, but he does not care whether he does or not. We cannot get a one hundred per cent. registration.

I think, if your plan is carried out of making a man register before he can keep bees at all, and if he does not register he must give up his bees, it would be a much better scheme; but you have to have somebody to enforce it. A dead-letter law is no good except to take up space in a statute book; and we have to look out for that. We have to do something in Connecticut to make this law more effective; but it is certainly a good law inasmuch as it makes everybody register his bees, and that helps the inspectors. Until the law was passed we did not have a good census of beekeepers, nor a good mailing list. Now, we have both to a very fair degree.

Mr. Howe: We have had experience in the registration of bees, and we got at it in this way: We made the assessors look up the beekeepers; and it looked mighty good until they made us pay taxes on our bees. I admit that we should pay taxes on the supplies; but when they went to tax bees, I urged that bees are not tangible property, and that in our law there is no provision for taxation of bees. I have had a lot of correspondence with the Department at Albany, and took it up from every angle, but could not convince them that that list was made for the purposes of the foul brood inspector. They said: "No, the assessor took it for the purpose of assessment." In some of our counties the bees are assessed. I told our assessor that I would not pay on my bees, that they could assess me on fixtures and plant, but there was no provision in our tax law for the taxation of colonies of bees. I said that if a colony of bees swarm and the swarm gets out of sight of the owner, the one who finds them takes the swarm as his property. He spoke about a cow getting away out of sight. I said but if a cow gets out of sight the owner can claim his property, but if the bees get out of sight they become the property of the man who finds them. I said also that bees were very uncertain, that we had heavy

losses in the winter time and some people lost nearly all of their bees. The result is that I do not know how we are going to get any redress.

If I might say a few words in regard to co-operation. "Am I my brother's keeper?" comes in right here. We have been told what a menace the little beekeeper is; but it is not always the little beekeeper who cuts prices. We have a three-year fight over becoming incorporated; but we are planning to have a jolly time at Albany next week, and wish you all could be there. We have chewed and fought and quarrelled. We must have a contract to hold a certain kind of beekeeper. Whatever system is determined upon, let everyone forget the differences of debate and unite for the benefit of all, and abide by the standards which are settled upon.

I am astonished at what you have done in the way of handling supplies during the first year. The only one who will kick is the manufacturer; but they will have to sell to you. A good rule is to "go slow and learn to paddle."

Miss E. M. Risch, of Albany, N. Y., representing the Lewis Company, spoke briefly.

Mr. Holtermann: As I do not expect to be with you after this session, I would like to say I have not a word of criticism about the registration of beekeepers. Personally, I am strongly opposed to anything like a tax upon those engaged in this industry that does not find a parallel in fruit-growing, stock-raising, and other industries; but registering is another matter.

The President: In the resolution brought in last year from Middlesex there was nothing in regard to a tax. Nor is there anything supporting a tax in this resolution from Tara, presented by Mr. Neil.

Mr. Haberer: The Huron County Beekeepers appointed three delegates to attend the County Council meeting. They were to ask the Council to pass a by-law to get the assessors throughout the townships to take down the names of each farmer who keeps bees, and information as to where they are located, and to hand that list to the township clerk. Then the inspector can get the list from the township clerk and inspect the bees.

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## IN MEMORIAM

Mr. Holmes: I am presenting the report on behalf of the chairman, Mr. Pettit:

1. Whereas we have learned of the death of Jacob Haberer of Zurich, which sad event took place on August 10th, 1922,

And whereas it is with deep regret that we note the passing of one who has been prominently identified with this Association for many years,

"Be it therefore resolved that this Association, in convention regularly assembled, take this first opportunity of giving a united expression of sorrow that we shall meet our esteemed co-worker no more in our assemblies, nor grasp his hand again on the shores of time.

"And be it further resolved that the sympathy and condolence of this Association be tendered the widow and family of the late Mr. Haberer as they sit in the gloom and shadow of this event, longing for the touch of the vanished hand and the sound of the voice that is still; and we trust that through the blinding mist of tears they may recognize the Master's hand and in the midst of the gloom they may hear the voice of Him who says, 'Fear not, I will never leave thee nor forsake thee,'

"And be it further resolved that this resolution be included in the minutes, and a certified copy be sent to the family of our late friend at their home."

2. We have also learned of the passing away of Mr. Kimble of Middlesex County, a member of this Association; and we would recommend that the resolution in clause 1 be repeated verbatim with the name and family residence of the late Mr. Kimble inserted in this case.

3. We learn of the paralyzing loss of some of our members in the great Northern Ontario fire, and we would recommend that this Association formulate some plan of assisting the said beekeepers in re-establishing the apiaries so destroyed by fire.

4. We would recommend that the plan of purchasing bees and queens through the central office of this Association be continued during the coming year, 1923.

5. We would recommend that negotiations be entered into with the manufacturers, with a view to supplying honey containers for the season of 1923.

6. We would recommend an increase of remuneration to Prof. F. E. Millen for the forthcoming year, for the arduous and ever-increasing duties devolving upon him as Provincial Apiarist and Secretary-Treasurer of this Association.

7. We note the very gratifying success of calling the Annual Convention of this Association for dates in the month of December. We therefore recommend December dates for the next Annual Meeting.

8. We have before us a resolution from the Bruce County Beekeepers' Association as follows:

> "That we, the members of the Bruce County Beekeepers' Association assembled at Paisley, send to the Provincial Department the following, which we think would be to the advantage of good beekeeping, namely, to have all beekeepers licensed, no license to be issued unless said beekeepers keep sanitary equipment, and also that the license fees be used to carry on the much-needed apiary inspection."

We submit this report for consideration by the Association in Convention.

I now move the adoption of clauses 1 and 2.

MR. PETTIT: I second that, and ask for a standing vote.

The motion having been put to the meeting was duly carried, and was so declared by the Chairman.

MR. TILLSON: I move the passing of clause 3.

MR. KROUSE: I second that motion.

The motion having been duly put to the meeting was carried unanimously and was so declared by the Chairman.

A motion that clauses 4 and 5 be laid on the table and taken up at a later period was then put to the meeting and carried, and was so declared by the Chairman.

MR. SIBBALD: I will move that clause 6 be laid on the table. We have gone to the Minister and asked for more salary for Prof. Millen.

MR. WEIR: I will second that motion. Our afternoon's work will have an effect upon that question.

The motion being put to the meeting was carried and was so declared by the Chairman.

Clause 7 was adopted on motion.

On motion clause 8 was laid on the table.

This report as amended was signed by MORLEY PETTIT, Chairman, and M. B. HOLMES and J. M. MCKINNON, and adopted.

## DISCUSSION ON REGISTRATION OF BEEKEEPERS AND FOUL BROOD.

MR. WEBSTER: It is a difficult matter to determine what is the best plan to free ourselves from the demon Foul Brood. There appeared to be three ways of getting funds for the purpose of combating the disease. The first one is to impose a tax upon ourselves. The next one is to ask the Minister of Agriculture for a larger grant. The third method is to educate ourselves so that we may become qualified to treat the disease. I am opposed to taxation, as a beekeeper is already doubly taxed, both financially and mentally. There is apparently plenty of money for good roads, public highways and hog cholera, and other things of minor importance; and surely we should receive assistance in what to us seems to be of major importance. To my mind the third plan seems the best of all, that we should educate ourselves to be qualified doctors and nurses to combat this disease.

MR. WM. AGAR: Our whole idea in bringing on this registration of beekeepers is to get some more money to carry on inspection work. It seems to me a very simple matter. The beekeepers of British Columbia, when they did want it, canvassed their members of Parliament, and those members of Parliament knew that they had to do something or they would not get the votes the next time they wanted them. What we have to do is to canvass our members of Parliament for more money, and if we do, we should get it.

MR. CALDWELL: I have a suggestion to make in regard to foul brood. When the associations have their field meets, usually in the month of May or June, they have someone who is qualified to discuss these foul brood diseases, and show them the method of treatment. Now, why not have each local association find out some beekeeper who has a yard which is badly diseased, or someone who thinks he has the disease in his yard, and hold the field meet at that yard. Then have not only the one man, but several of the men from that county, who are competent to inspect diseases, and have them go through that yard that day in the presence of the assembled beekeepers. In that way they will be able to instruct every one in determining the disease, and also to treat a hive or two to show the proper method of treating them.

In that way I think we could do a great deal in the way of cleaning up disease.

MR. ARMSTRONG: This gentleman has suggested a plan which we have already tried out. Mr. Weir will remember our doing this. When we were minus a professor up at the College to look after things, Mr. Weir had charge, and I had a little to do with it; and we came to the conclusion that this would be a very good plan, and tried it for that season at any place where we could get a yard in which we could have a demonstration in the treatment of foul brood. The inspector of the county would go there a day or two before, if there was a large number of colonies to go through, and inspect the yard thoroughly, with the exception of a few colonies which he would leave so that he could put in an hour or two on the demonstration of how to make an inspection. We also took our outfit with us, and our foundation, to treat a colony there before the people. That was the main thing we did in those days in demonstrations of how to look after foul brood, and those present could see exactly how it was done. I might say, while speaking on this subject, that I always prepared the colony or colonies the day before, by cutting out all the burrcombs, etc., which you will always find between the frames and between the frames and hive, and between the frames and the queen excluder. By that means, everything was ready to take out freely, with no dripping honey. The fact was that I did not then need a

hive tool; and would take out an end frame, and spread out the other frames, so that when we treat that colony the next day we have not a drop of honey running any place; the combs are all dry. Then we do not shake our bees on the outside of the hive; we brush the bees off the combs into the inside of the hive; everything is inside the hive, and we have our comb and foundation in the bottom of the hive. We may put them on a dry comb, or we may put them on starters. Lately, we have been putting them on one dry comb and the balance of foundation. We take an empty super and put it on top of that hive; on that we put a quilt or a board to cover half the space; then all our brushing is done in that open space, and when we get through there is not a drop of honey on top of or around the hive. We leave the super on until we take out the dry comb.

Sometimes a colony of bees will swarm out when you treat them, but always give them plenty of room so that they will not swarm out.

That is the method we used in those demonstrations which would be seen by forty, fifty or a hundred beekeepers, so that they would know just the way in which we think it should be done. As long as we were able to carry on the demonstrations in that way, they worked well, but there was the old cry, "The money is done, and you had better come in, boys!"

MR. WEIR: Until we are able to get a sufficiently large sum of money to enable us to have complete inspections thoroughly made of the apiaries, my heart is with the demonstration outlined in the plan which Mr. Armstrong has just placed before us. Education comes first, and legislation will follow, in my opinion, and, until we get sufficient money to enable us to inspect every apiary in Ontario in the first season, I believe the actual demonstration of the treatment is the most effective way of reaching the problem.

MR. CALDWELL: Mr. Armstrong and Mr. Weir emphasize the fact that money is scarce. At these demonstration meetings, I do not think it would be necessary for us to have a provincial inspector come in, at an expense. There are beekeepers in each county who know the disease, and are sufficiently familiar with it to do the work, and I think none of them would object to giving a day of their time for the purpose of in this way helping their fellow members in the Association to clean up the disease.

MR. LUNDY: I am not a very old beekeeper, but foul brood appears to be important to everybody, and this discussion should be of benefit to all of us. Mr. Houghton told us about the organization which they have in his county. A year ago, I was visiting Lambton county, at the time of their beekeepers' meeting, and they thought they had a very good thing started there. Each member put in as high as $25, or possibly $50, and they went to their county council and got a grant. That was for purposes of education. That seems to be a very good thing to consider in local county organizations. It may be worth a good deal to a man with bees to have disease kept out of his neighbourhood. Much might be done by starting at home, then get after the county council and then after the big fellows. A county council does not do things without the whole county knowing why it is being done.

MR. EYRE: I am not a very young beekeeper, but during the past forty years I have had this subject of foul brood discussed at conventions. We do not know what might have been the condition, if it had not been for the work of inspection in the past. I think there would be few beekeepers in Ontario if it were not for this Association. There would be no foul brood law. Leather-coloured Italians will clean up the European foul brood completely. I have heard the golden queens recommended, but I would not allow one to be introduced in the yard. They are bred too much to the colour.

## WHAT TO AVOID IN CO-OPERATION.

Frank C. Hart, Toronto.

One thing to avoid is trying to do business through a non-business organization. I would therefore advise that, not this organization but a separate business concern be erected for carrying on the business of merchandising your product. That your present organization has a function to perform, and a very important function, year after year, is, I think, abundantly evident from the great number who are present at this session. But this organization is not built for the purpose of carrying on a business, and possibly should not be so organized. Therefore, it is essential, I think, that you go into the business of marketing your product through a business organization separately formed, incorporated, and properly built upon sound business lines.

Briefly, what to avoid in a co-operative organization might be stated in one sentence. Those things to avoid are exactly those things which any business man, any manufacturer, should avoid in merchandizing his product. That is true of safety razors, of hair ribbons, and of honey.

The failures in co-operative organizations, in practically every case, are due to nothing inherent in the system of co-operative marketing; they have been due, in practically every case, to a business reason, to a wrong conception of how to carry on a business. And so, the one message I can give you this afternoon is, in erecting this business of co-operative marketing, do not neglect in any detail those sound business principles which apply to any business. In a co-operative organization, however, there are certain safeguards which are available, which are not available to a private business concern. That co-operative organizations in the past have not taken advantage of these safeguards and, as a result, have failed in business, should not be laid at the door of the co-operative system of marketing, but should be laid at the proper place, the wrong use of the system, or an unbusinesslike use of the system.

These safeguards which are open to a co-operative organization are, first,—and these are things to be avoided in erecting your co-operative business: Avoid starting your business without having assured yourselves that you have sufficient volume to carry that business. This, as I say, is a safeguard which is not available to a private business concern. You, before you start, can determine what shall be the minimum volume signed up before starting, and here comes in the question of the contract, the basic rock upon which you should build. The main thing is to gain control of your product, and you can do that, which the private dealer cannot do. And I want to point out to you that with 50 per cent. of your crop tied up in one concern, you have a much greater proportion than the other 50 per cent. divided among a lot of small dealers.

The contract should not be for one year. The contract should be for at least three years; and that is a safeguard that you can incorporate in your business concern, and avoid the risk of failure the first few years.

The second safeguard,—and the second thing to be avoided,—is trying to start your business without definitely deciding upon grades of the product, the honey. I know this will be a question which possibly will be difficult to settle. Let me point out to you that apples are of forty-eleven different varieties, of different colours, of different sizes, and different shapes. They ripen at different seasons of the year, they last different lengths of time. There are gradations in the colouring of apples from yellow right up to bright red. They are used for different purposes,—a thousand differences in apples; apparently,

it would be impossible to sit down and write in a paragraph of four lines a description of a No. 1 apple, which will apply all over the Dominion. Impossible, but it has been done, and fruit growers have been marketing apples on a graded basis which has been the foundation of our export trade.

With that condition in front of us, I cannot see any insuperable difficulties in you honey producers deciding upon definite grades upon which your honey will be marketed and, consequently, the producer paid. I think it would be a mistake to start your organization without having decided upon those grades, so that you can pay yourselves on the quality of the honey which each of you produces and places at the disposal of your organization. That is a safeguard which is open to a co-operative organization, a safeguard which the private dealer finds it very difficult to make use of. If he starts to grade honey, he runs against almost insuperable difficulties, but you can start on that basis, which is a sound and just basis and, consequently, a permanent basis.

A third thing to avoid is speculation. In a co-operative organization, the product is marketed and the returns from the marketing of that product all go back to the producers, in proportion to the quantity and quality of his products, less the cost of doing business. That is, it is a non-profit concern. In order, however, to build up a sound and permanent business, not knowing what those costs of doing business are, a wise business manager will reserve and keep back sufficient to cover those costs. A mistake which so many of our co-operative organizations have made is in not keeping back enough to cover the expenses. But by keeping back sufficient to cover the expenses, and, then, if there is anything left over, returning to the members in proportion to their quantity and quality of product delivered, the business is done at actual cost of doing business, and avoids the risk of speculation. That is, the Association does not actually buy honey from its members at a price, hoping possibly to sell the honey for more than the price paid to the producers. You can avoid that speculation by keeping out a larger proportion than is necessary to cover expenses, and make a safe business, and make returns to the member, as I said, in proportion to quantity and quality of the product delivered. And that is another safeguard which is open to a co-operative organization which is not open to a private dealer.

The other things to avoid are, as I said at the start, the thousand and one things that any person in business should avoid. The hiring of inexpert management,—possibly more co-operative organizations have failed on this account than on any other one thing. We get it into our heads that the middleman is a useless individual, and that any one of us could do the job better than he can. So, in our co-operative organization we pick on some person who is a good honey producer and hire him to market our product, forgetting that we are hiring him not to produce honey—that is your job,—but to merchandize the product. Therefore, my advice is to avoid hiring some person who is not expert in the honey trade the world over. Get the best man available, forgetting the price you will have to pay him, remembering this fact that, at the present time, in the aggregate, you are paying business management a much larger sum than five, or even ten, or fifteen thousand dollars. Those hired men who are merchandizing your product are the middlemen to whom, as I say, in the aggregate you are paying a large amount of money, which you do not realize, and, consequently, when it comes to hiring your own business management, you will get into your head that $10,000 is too large an amount. The main thing is to demand service of your management.

Another thing to avoid is neglecting to use those markets which are available to you. This, I think, is especially true with regard to honey producers. At

the present time, your honey crop is marketed. It does get to the consumer some way or other, and there is a large number of sales agents, practically every one of you is one, for marketing honey. I think it would be a mistake on the part of any business concern to neglect such a market if it were available, until you have built up markets to take its place, or the machinery of trade to get the honey to the consumer through some other channel. That is something for the business management, for the board of directors, of your company to decide. Each of you has customers who are valuable customers and they should not be left high and dry without your product, and the business concern which you erect for marketing honey would take advantage of that.

That means that at the start your business concern is not antagonizing those channels of trade which you are already using. The wholesale houses which are now handling your honey should not be your business enemies. I would think that you should go into this organization with the idea of making business friends among the trade who are now serving you to the best of their ability; and what your organization should do is to assist the trade to more efficiently carry out the work that they are doing in marketing a certain amount of your product.

Finally, the last word I want to leave with you is this: Avoid having too great expectations as a result of the business during the first year or two. That is one reason for the length of the contract being three years, at least. The main difficult time in the history of any business is in its initial stages, and any new organization is inexperienced, and will meet unexpected difficulties and will not know how to meet various situations, and it will cost considerably more for an inexperienced organization to carry on business than it will for an experienced business. The only question to decide is, is it worth the money?

Is the merchandising of your crop at the present time upon a sound and permanent basis? Are you willing to continue for the next fifty years ma rketing your crop, as you are at present marketing it? If you are not, and this co-operative system appeals to you as something better and more permanent, then I think it is worth going through this initial stage and making these initial mistakes that will be made, perhaps blundering through, but getting there eventually. I do not think it needs the argument of any person that the system of co-operative marketing is absolutely sound. It has demonstrated itself more than once, not only abroad, but right here at home, as a system of merchandising that is absolutely sound and permanent, and a benefit to every producer. That being so, let us, in this important industry of honey production in the Province of Ontario, get in line and put the industry where it should be. I know that there are certain people who believe (erroneously, as I think) that limiting the production expands the market. That is to say, if you get more people to produce honey, each of us will sell less. That is an unsound business principle. Many illustrations might be given of that, let us take raisins in California. I do not doubt that every one of you have learned what occurred in the raisin industry in California, doubling the production and the price to the producer, and still you and I are getting raisins just about as cheaply as we did before.

I believe that the large beekeeper, who is in it for the business itself, would be well advised to get behind a movement of this kind which would put the merchandising of his crop on a sound basis, in his own personal interest.

I want to impress upon you, both large and small beekeepers, that the co-operative principle as applied to merchandizing of honey has a broader and brighter future than almost any other commodity that we are producing in the

Province of Ontario. In my estimation, the market is wide open. The trade, as at present constituted and handling your product, is not in a position to extend that market as it should be extended, and you, as producers, with control of your product, have it in your power to erect a sound business concern, conservatively organized and managed, that will be able to vastly extend the market for honey, now produced and for thousands of other beekeepers who could be in the business in the Province of Ontario.

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## IS CO-OPERATION POSSIBLE?

R. D. Colquette, O.A.C., Guelph.

Mr. Hart has been discussing some of the things to avoid in forming a co-operative organization for marketing purposes. Perhaps, to follow logically upon his remarks, I should deal principally with what to do, that is, the practical steps to take in forming a co-operative marketing organization in order to ensure the greatest possible measure of success.

All important industries, except agricultural industries, have their sales department, and the sales department of an industry is generally the most efficient in the whole organization. Take some of the industries with which we, as farmers, identified with agriculture, are most familiar. For instance, take the industry of manufacturing agricultural machinery. You know perfectly well that you are getting along pretty well with your old binder. It may skip a few sheaves occasionally and occasionally an old cutter pin will drop out, but even while you expect to get four or five more years out of that machine, you will find agents camping on the trail and trying to persuade you to discard that old machine and buy theirs. It is the same way with plows; each trying to persuade you that they have the best machine on the continent.

We have, in Toronto, the largest organization in building machines, in the British Empire. Do you think they built up that machine without considering their representatives throughout the country? If the men throughout the country do not press their business to the fullest extent and secure the greatest possible amount of that business, they will soon be sent to the scrap heap and more successful men put in their places. And so you have in these big industrial organizations, evidence that they are not content to go on producing the machinery and bringing it out to the roadside and throwing it down there and asking you: "What are you going to give me for this?" The only industry that is able to survive on any such business basis is the agricultural industry, and how they have succeeded with prices such as they receive now for the products they have to sell, and with prices such as they are for what they have to buy, is something that puzzles most of us.

The individual honey producers cannot each maintain an efficient sales department, not even the honey producer, because the biggest of them only produces a small percentage of the total output, and the conditions under which they market their output is controlled by the great uncontrolled flow of honey on the market, which you cannot estimate, but which has the controlling influence upon the market in which they have to sell their product. None of them, therefore, can have an efficient sales department, but the honey producers of Ontario, by co-operating together, can maintain an efficient sales agency which will act as the sales department for each individual one of its members, giving

to each member the advantage of systematic sales management in the disposing of their product.

That is the whole subject of co-operative marketing, to adopt in marketing an agricultural product the same principles which have been adopted by every important manufacturing industry in the country, and that is the whole story, with the exception that with a large number of individual growers, in order to form such a central selling agency, you have got to form a very closely knit organization, holding them all in together, and guaranteeing that the product of all the members will flow through that organization's central agency into the market.

I mention, first, organization, and I want, first of all, that you get very clearly in mind the basis upon which to organize. You, I believe, in contemplating the formation of a co-operative marketing organization, have the correct idea in mind. You are engaged in the production of honey, and it is an organization for the marketing of that honey that you want to form. That organization, then, will be on what is known as a commodity basis, it will confine itself to the marketing of that particular product. That is one of the fundamental principles of successful co-operative operating everywhere. It is not on a territorial basis, but on a commodity basis. That is the principle of co-operative marketing in Denmark, and also in California, and in some of the other states, as well as in Canada. The organization, therefore, confines its marketing operations to the providing of markets to which the producers would sell their honey co-operatively.

Mr. Hart mentioned something in regard to the minimum, that is, you should have a volume guaranteed before you start. That is the general consensus of opinion amongst authorities on co-operative marketing, that in order to insure success, you should not start unless you have sufficient volume, so that you really become the dominating factor in the market which you are serving.

At the present time, though I am on the staff of the Ontario Agricultural College, my services have been loaned to the dairy industry, which is in the process of formation in Ontario. We have set fifty per cent. as the limit on the cheese industry, because, in order to start in with the greatest possible assurance of success, a minimum of at least fifty per cent is necessary.

Your association already has done some work in regard to the handling of supplies, and Mr. Hart has mentioned that a new business organization should be formed for the handling of your honey. I concur in that opinion, and believe that you should have an organization separate from your educational organization, built up absolutely on co-operative business principles, and not controlled in any way by the association, but controlled by its own membership. That business organization might take this question of the distribution of beekeepers' supplies as a branch of its operations. All the big co-operative marketing organizations with which I am acquainted—and I have had the advantage of travelling extensively and investigating them, including those in California—the majority of them have subsidiary companies handling supplies for their members. Applying their practice to your organization which you have in mind, that organization in its supply business would confine itself to those things which you as beekeepers require, the articles which come under the general head of beekeepers' supplies. Right here, I would like to impress upon you this fact, that the handling of your supplies should always be kept as a subsidiary matter, and that the main business of your organization be the marketing of your product.

A farmer's chief interest is in the marketing of the product of his labor;

and a co-operative organization of farmers for marketing purposes must make the marketing of farmers' products its primary object. Make the organization primarily for marketing purposes, and then you can have a branch using the organization backward for ordering in your supplies in large quantities.

Then there is the question of pooling and grading. If you have a central selling agency, with consignments of honey coming in from hundreds of producers, that agency cannot take each individual producer's product and keep it separate and handle it separately. You have to introduce two features; the first is grading, and the second is pooling according to grade and quality.

The product, as it is received would have to be graded. I do not know anything about the grading of honey, but you have honey experts who would be able to work out those grades that would be satisfactory and would give a square deal to all the producers. As soon, therefore, as the consignment is received, wherever the receiving station is, it is graded, and an account kept of the amount and grade or quality; and then the consignment looses its identity and it is pooled or mingled with the product of a similar kind or variety from other producers; and then the business management makes its sales from those pools, both the pools and sales being strictly on a graded basis.

With regard to payment on this product, the customary thing to do is to make an advance, on the receipt of the product, of a certain percentage of its market value. It is contemplated that we will make an advance of 80 per cent. of the current market price of cheese. You can do something like that too, making the advance whatever is considered safe. It is considered safe if upon the loan value, if warehoused. You will be able to make arrangements with financial interests for the loan of money up to 75 or 80 per cent. of the current market value, on the basis of graded warehouse receipts; and that is the way it is done now. Business concerns who have their money all locked up in their product, are negotiating all the time with the banks for loans, with the stuff in store as collateral security.

Then dealing on a graded basis, the business management merchandizes the product according to the consumptive demand; and when a pool is sold out, after the necessary deduction is made, the balance is returned to the producers.

I do not know how long these pools, in the case of honey, would be kept open. That is a matter for your business management to decide. It might be quite possible to close them up every month or two, according to the flow of the different kinds of honey. With regard to fruit, I know that in connection with strawberries, for instance, they close the pools every day. They have daily and monthly pools, according to the advantage to the producer and catching the early market. Those are matters which are controlled by your business management; and I imagine that there would be several during the season, and that each individual contributing to the pool would get the price of his product.

The next is contracts. All the California organizations have hard and fast contracts. The Raisin Growers, which have already been mentioned, had, up to several years ago, a seven years' contract; and then they had a campaign and signed up about 90 per cent. of their growers on a fifteen years' contract.

Other associations have such a contract; and it is generally deemed advisable, when organizing an association of this kind, to start out with a term contract covering a certain period of years, in order to build up your personnel, establish your market connections, and build up your finances and your financial credits, and so on, so that the producers and members have an opportunity of judging your organizations' activities, and as the result of your activities extended over a period of years, and comparing the bad with the good years.

Another advantage which comes from the contract system is this: I mentioned a while ago it was well to have a minimum in mind when you start up. You might start up, having in mind to have fifty per cent. of the product of our industry in the province. The members sign a contract agreeing and guaranteeing to deliver, for a period of years; and you can estimate, from week to week, what you are doing. I would have in those contracts a statement of what the production is; so that, as the contractors sign, you are able to judge, from time to time, where you are and whether or not you are nearing your objective. Then, when the signing up is completed in your canvass, you know almost exactly what you have to handle on an average year.

In building up your business management, making marketing connections, etc., you know exactly what you have to handle, what you organization is expected to do; and can build your personnel to suit, whether that volume is large or small. Then, of course, the greatest advantage of all of the contract is that it holds the organization together.

The enemies of co-operation everywhere had a favorite method of breaking up a co-operative marketing organization, and that is to go into an isolated district and steal away the members' patronage here and there. If it is carried on, it will weaken the Association; and if it is carried far enough it will destroy it. With you contract signed, the man in Grey County has no hesitation in standing by the Association, because he knows that the other members in counties two hundred miles removed have also signed contracts and are standing by the Association also. I heard a man in the United States saying that it put a lot of the grace of God into a man's heart; and when a man comes around and offers a quarter of a cent. more a pound, he is enabled to say "Get thee behind me, Satan." A contract tends generally towards stability. In fact, as Mr. Hart has said, the adoption of the contract must be credited with a very large measure of the success which had come to some of these splendid co-operative associations which have been developed on this continent.

The next thing is in regard to capital. I will first enunciate the co-operative principle in supplying capital to an organization of this kind. The principle is that each member finances the organization in proportion to the extent to which he utilizes its facilities. A man, marketing a certain volume of product through the organization, subscribed for a certain amount of capital. A man marketing twice that amount of product through the association should subscribe for twice that amount of capital; each bearing his proportionate share of that capital, in every case should call for a dividend; and in a co-operative organization your dividend can be practically guaranteed, for the reason that it is a selling agency and makes deductions for the cost of handling, and, at the beginning of the year, it should estimate what the cost for carrying on the business will be, and reduce that to a poundage basis, and make that deduction throughout the year, allowing for a safe margin and for all current expenses, including interest on the capital; so that the association can practically guarantee its dividend; and anything that is left over, as already mentioned, would be distributed amongst the various members according to the patronage.

Something has also been said this afternoon about the extension of markets. I was in California two years ago making an investigation of some of the splendid co-operative associations there. I remember being given piles of old newspapers by the Sun-Kist Orange people, one of the finest co-operative associations on this continent, handling between sixty and seventy millions of dollars of business through the one office, with sometimes as many as a thousand carloads of citrus fruits rolling toward the distant markets. Those accounts were news

when printed. There was an over-production of oranges twenty years ago. Really the difficulty was that there was under-consumption of oranges. They formed their splendid organization, and then started to exploit their market. Though production has been increased by leaps and bounds, consumption has always kept a little ahead of it. The same thing is true of prunes and raisins, apricots, and other things organized on a state-wide basis.

I do not think for a moment that in Canada, generally, the consumption of honey is anything like what it ought to be. What should the annual consumption of honey be per capita? Nobody knows even what the current production is. These are matters which receive attention from co-operative organizations for marketing purposes; and you can do for the consumption of Ontario honey in Canada something of what has already been done by the California Associations in increasing the consumption of their products in Canada and the United States.

I will close with one or two instances of the efficiency with which an organization of this kind can function. The Sales Manager of the Sun-Kist Orange concern, the California Fruitgrowers' Exchange, said that in the summer of 1919 they got a telegram one day from their representative in St. Paul and Minneapolis saying that an intense heat wave had struck the north of the prairie states, and they wanted more oranges and lemons. The Association then got into touch with the Meteorological Department and had the heat wave mapped out across the continent; and they started oranges and lemons going across the continent, and they gave diversion orders, and had a constant stream of oranges and lemons moving across the continent ahead of that heat wave, which moved at about 600 miles a day. That is one of the features of merchandising, to find what is needed, and avoid any local shortage of the product, which means the curtailing of the market, as well as avoiding all local gluts; so that no matter how small the consumption is, the product is moving in evenly and nothing is going to waste.

Another thing, which illustrates the efficiency with which a co-operative organization of that kind can function is found in connection with the raisin industry. Their sales manager said to me, I suppose you notice that wherever you travel through the United States, you always find raisin bread and raisin pie on the menus on the dinners. And that was so. They had an arrangement by which they had those things on the menu.

I heard Hon. Mr. Doherty stating that he understood that in various states of the Union they had women who put on short courses in domestic science. He supposed that they had similar organizations in Ontario; and how pleased they would be to furnish demonstrators, without cost to the Province; and the Minister said if they did, probably they would have the women putting raisins into every blooming thing they cooked.

If you proceed with your organization, I would just stress what I have said a few minutes ago, have it, first and foremost, a marketing organization; and then with the branch for distributing supplies, if you deem it desirable to establish such a branch. The chief industry of a firm is the sale of its product; and the chief object of your organization should be for the efficient marketing of your product; it should be built with that single object in view, of having the most efficient machinery possible for the marketing of the product of the producers who are to become its members.

MR. WEIR: How did you arrive at the fact that fifty per cent. of the total cheese crop would be sufficient to control the market?

MR. COLQUETTE: The idea is to have the organization the chief factor in the market, and the minimum is more or less of an arbitrary figure, but the basis advised by experts in co-operation who have been observing the operations of co-operative associations in Canada and the United States, put the minimum at from fifty to seventy-five per cent., and, in some cases, a minimum of forty per cent. This is just an arbitrary figure which has been arrived at from the experience which has been had with organizations functioning in a similar manner.

MR. HUTCHINSON: For the marketing of honey efficiently, there was mentioned a central organization. If it were necessary to ship all the honey to Toronto as a centre, would it not be a tremendous drag for freight?

MR. COLQUETTE: You should have one central organization, one central business management, and one central sales department handling all the business which comes forward. That does not mean, however, that the product has to come forward to one central point. I do not know what the conditions are in regard to honey, but I would expect that there are several points in Ontario which could be used as collecting stations, where grading can be done. One man might look after the grading for two or three collecting centres, because it might be cheaper to move the grader from one point to another than it would be to move the honey to one central point.

MR. GILLESPIE: How much does it cost to sell the California products, such as raisins, oranges and things like that, even in Denmark?

MR. COLQUETTE: The only definite figures are those given by the late G. Harold Powell, who was, for many years, the general manager of the California Fruitgrowers Exchange. In a statement at a public hearing about a year ago last winter in Chicago, he stated that the co-operative method of selling had reduced the cost of handling in the case of citrus fruits, from fifteen to two and one quarter per cent., and that that two and one quarter per cent. also included large appropriations for advertising purposes.

The closest that competitors had come was seven per cent. The Fruitgrowers' Exchange had brought their efficiency up until they had reduced their overhead, the association having about eighty-two per cent. of the product, and the outsiders the remainder. At the same time, that is not the chief advantage which has accrued to the associations; but the chief advantage has been in introducing business methods, increasing consumption, and stabilizing production. That has had a greater result than the reduction in handling charges.

MR. HART: In Leamington there is a comparatively small organization which markets some six or seven hundred thousand dollars worth of hothouse products. In the first year of business, their overhead was a little over eleven per cent. as a co-operative organization. This decreased from year to year until at the present time it is somewhere about three and one half per cent. That is what I mean when I said not to expect too much the first year. Your overhead may be eleven, twelve or fifteen per cent. I do not know. It all depends upon the efficiency as you carry on. But as you increase in efficiency that overhead will decrease. I give you that as experience had at home, and not in California.

A MEMBER: Might I ask what means are taken to prevent graft in these organizations?

MR. COLQUETTE: The general experience has been that co-operative organizations have to hire efficient managers to head their departments. They have been able to get efficient service. An organization like this, of course, is democratically controlled, and your representatives would be by districts, and

you would have a central Board appointed by the producers over the Province, with a Central Executive which would give to the business that constant and close scrutiny which is necessary to business success. That Central Board would hire your business management. The hired managers, of course, would have to be adequately bonded, etc. As far as my inquiry has extended with these successful organizations, they have not had any experience of the kind hinted at, probably one of the reasons being that they lay out from the start to pay their men adequately, and probably make graft unnecessary.

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## CO-OPERATION.

W. Bert Roadhouse, Deputy Minister of Agriculture, Toronto

It is one year ago since the Hon. Mr. Doherty addressed you on this subject, and I believe considerable progress has been made. I understand you have had some of your members making a detailed study of the subject since that time, and you have through your officers, and, particularly, through your very capable Secretary, been carrying on certain co-operative efforts and measures, the results of which are now before you. I believe I am safe in saying that the results of the efforts of the past year not only reflected great credit upon your Secretary and other officers who have had charge of the work, but also tells something about the soundness of the principle of co-operation which has been put into practice and which has brought to you such beneficial results. It is, however, of some interest to note that not only here but elsewhere is this subject of co-operation receiving a great deal of attention.

I was very much interested, and I thought you might also be interested in a little article which I happened to notice in a very recent number of this publication, "Gleanings in Bee Culture" with which many of you are possibly familiar. The October number contains an article entitled, "The Marketing Problem" and in this article, Mr. George E. York, of the state of Washington, comes out strongly and boldly in advocacy of a national honey marketing association for the entire United States. And if you men in the province of Ontario are impressed sometimes with the difficulties which confront the perfecting of an organization over the area and with the varied interests of this Province, you will, I am sure, appreciate the courage and the vision of a man who advocates such an organization to cover all the states of the Union, with all their varied conditions. In his opening sentence he says:

> "It seems to me, as I review the past many years of honey production in the United States, with which I am somewhat well acquainted, the greatest need of beekeepers to-day, is a national organization that will keep in touch with all the leading wholesale honey markets, and direct the shipping of honey in car lots where they are most needed to supply the market. After giving the subject considerable thought, I cannot conclude otherwise than that the leading commercial honey producers of this country should get together and form this kind of organization."

Then he goes on to explain how he came to this conclusion. He says:

> "The thing that has caused me to discuss the honey marketing question again is a private letter received from central California, and dated August 10, 1922, in which the writer reports that 'two carloads of new alfalfa honey sold recently in San Francisco for 5¼ cents a pound,—about half the cost of production.' "

It is experiences such as those which stimulate thought and lead to action; and it is surprising indeed to find that the honey producers should be one of the last industries to come into organized marketing efforts in the state of

California, which has been so outstanding in its co-operative achievements in the past few years. I throw out to you that suggestion, that this subject of co-operative marketing is one which is absorbing the interest and the thought of those who are engaged in or interested in the improvement of all branches of agricultural industry, on this continent.

I believe there is no movement which has made more progress in the last few years than this subject of co-operative marketing; and I also believe that there is no movement which will make more progress on sound, safe, sane business lines in this province of Ontario, than this same subject of co-operative marketing in the next few years.

Some person, a short time ago, expressed the belief that he thought education should precede legislation. Sometimes we find that education follows legislation. Still, I think co-operative marketing, even after all your suspicions have been investigated, has had something to do with raising the returns to the producers of raisins from one and a half cents per pound to twelve cents per pound, which is the remarkable advance which has been made in that particular crop.

Let us try to conceive, if we could, the sudden growth in the demand for a product. Let us try to conceive the less rapid growth in the quantity to supply that demand. And what would happen? Is it not a fact that immediately those few, keen, shrewd men who are in touch with the demand would forsee that great demand, they would immediately proceed, to their own advantage, to make provision for that need? And I venture to say that we would have witnessed in the matter of the handling of raisins one of the finest illustrations of the art of speculation, and one of the largest crops of new millionaires that has ever been seen in a short time in this continent had it not been for the fact that co-operative marketing organizations had been perfected to take care of this crop and meet this need.

We find that the results which have been secured in the matter of raisins have also been secured in other commodities, the increase in the demand for which has certainly not been traceable to the same cause. I hold in my hand a little pamphlet issued by the American Cotton Growers Exchange, entitled "Commodity Co-operative Marketing," and I have a few extra copies which I intend to leave on the table for any person who may be interested, and if there are not sufficient we will probably be able to supply additional copies. This contains a great deal of information in regard to this organization, and also a summary in regard to the success of their organization; and in this you will see that this also is one of the new organizations. It is only two years old, and yet it is handling, I think it is, over $40,000,000 of crop. And I do not think that the success of the commodity co-operative of cotton marketing can be explained away by any recent legislation. Neither can we so account for the success of the tobacco industry. The story is told of the tobacco growers of Kentucky, of the extent to which that industry had decreased, at least the position of the men engaged in the production end of the industry, and how at the beginning of the year 1921 the industry was almost bankrupt; and at that time the movement for co-operative marketing organization was started, and it has already attained success, which has brought not only added revenues, but also an increased confidence and an enlarged outlook to those who are engaged in the industry. And, because of the fact that these new, large co-operative marketing organizations have sprung into existence within recent years, and because there is a steady trend of organization along that line, I base the statement that this movement is making real and genuine progress,

because it is based upon sound business principles which are bound to win out in the end.

We have already been told a great deal of the details in connection with co-operative organizations. It is not my intention to go over the ground which has already been so very well covered by both Mr. Hart and Mr. Colquette; and yet, perhaps, I cannot say anything without seeming to traverse a few points which they have made. I feel, however, that perhaps I can serve some good purpose in trying to summarize and visualize just one or two of the main points, and then leave the problem with you.

In the first place, there is nothing new about co-operation. Co-operation, as a word, has been with us for many, many years. Co-operation, as a practice, has come to our notice from various place and in various forms. Of co-operation itself there is nothing new. What, then, is new about co-operation? Just this, and this is a point which has been already made but which cannot be too often emphasized or too clearly understood, that is, co-operation on a commodity basis is a new factor which has come into the whole theory and practice of co-operation in the last few years, and which, when practised, has, I believe, resulted in no failures. Co-operation on a commodity basis simply means bringing together those men who have a bond of interest. It is essential, in the first place, to have that community of interest, and if you can get together a large enough number of producers who have a similar basic industry, who have basic interests in that industry, and by bringing them together can also bring together a sufficient volume of business to exercise some influence on the market, then I believe you can safely feel that you have started out on a sound basis, and from that basis you can build up. That gets you away from the idea of the locality. It is true there has been, in some respects, also successful co-operation on the basis of the locality. That has been all right in many cases, so far as it went; but in the last analysis it meant, instead of a number of individuals competing together, a number of small associations competing together, and the end was very frequently unsatisfactory. To avoid that disaster, the larger organization, on the sound commodity basis with a volume of business sufficient to enable it to employ the best brains, is the ideal which seems to commend itself to the best business judgment.

Let me just say in answer to one or two questions which have been asked this afternoon, that in the first place, in so far as the cost of selling is concerned, it must necessarily depend, to a large extent, upon the volume of your business. If, as has been said, California has been able to reduce its selling costs to less than three per cent., it is due in large measure to the great volume of business which they have been able to handle, and it is only as you get a large volume of business that you are able to reduce your selling costs. That does not necessarily mean that you need to have a thirty, forty or fifty million dollar organization before you can start; but it does mean that you should figure your selling charges on the basis of your overhead. You will find that the same selling costs will be incurred if you have three or four hundred thousand dollars worth of business as, perhaps, if you have eight or nine hundred thousand dollars worth of business; and that has to be taken into consideration.

Then another question was asked, as to how to prevent graft in these organizations. The answer to that, if it is an answer, is that these organizations are controlled by the producers themselves; the producers, as members, elect their directors. The directors elect the executive. The executive selects the management, and there should be the fullest democratic control of the business as well as the most efficient, businesslike management at the top. In that

way, if they cannot keep out waste, dishonesty, or any other abuses, I do not know of any system that will. It is quite clear, at least, that it will give to the producer the absolute control of his product, and enable him to make his own provision for safeguarding it, instead of allowing his product to pass immediately from his own hands into, possibly, the hands of speculators, where the larger danger lies, and into which the larger measure of profit too often goes.

Then there is the other question of the relation of co-operation to prices. This is a somewhat delicate problem, and some reference has already been made to it. It cannot be claimed, and it is not pretended that a co-operative marketing organization will fully control the price of the commodity on the market. There is too wide an area of production for that to happen, and that is the very best answer to give to any person who suggests that in the organization of a co-operative marketing body you are seeking to effect a monoply which is going to be oppressive on the consumer. It is not possibly for that to happen, because production is over such a large area, not only in our own Province and our own country but in other countries, and the general flow of trade over those areas would be sufficient to frustrate any such attempt if it were made. It is, however, claimed, and I believe it is reasonably claimed that a co-operative marketing organization will being to the producer the maximum portion of the price which the market gives, and will do that over the entire season, instead of forcing him to accept whatever prices the early market may offer.

In 1917, I believe, there was a Wheat Board established by the government of Canada to handle the wheat crop of this country. That was a compulsory government measure, rendered necessary and justified by reason of war conditions then prevailing. I am not for the moment discussing the form of organization or suggesting that it should be done by the government; but I would just like to use that to illustrate this point. It was in 1917, I believe, that the Wheat Board was brought into existence, following a flurry. In 1915, we had our large wheat crop, and we carried over until 1916; and in 1916 we had a smaller crop. The crop of 1916 was quickly taken out of the hands of the producers into the hands of the speculators; and in the spring of 1917, wheat was selling on the market at from three dollars to upwards of four dollars per bushel until the Wheat Board was brought into existence and a fixed price of around two dollars and twenty-five cents was established. I do not happen to have the figures with me at this moment, but I know I have seen figures which go to show that the farmers received more for their wheat crops of 1916 and 1917, which he sold at two dollars a bushel, we will say, than he did for his wheat crop of 1915, which passed out to the consumer at three dollars per bushel, simply because the difference between the two went into the hands of speculators and not into the hands of the producers. That perhaps applies more directly to wheat than to other commodities. It is for you to say how far that applies to your commodity. It is not suggested that it applies equally to every commodity, but I suggest to you that the principle is sound, that the organization which will bring to the producer the maximum proportion of the market price is the organization which is best in the interest of the producer. And these are the main points to be considered in bringing this about.

I would just emphasize one other point which has already been referred to, and that is that it is not a proposition for one year or for two years. It is a proposition which cannot be worked out successfully in less than three years, perhaps four or five years.

Some person asked the question this afternoon, "How are we to bring about this organization?" First of all decide in your own minds if you believe the

principle of co-operative marketing on a commodity basis is sound. If you believe that it can be properly applied to your commodity, and if you are satisfied on the other points, then appoint or re-appoint your committee, as the case may be. Select the best men of experience in your body, and give authority to them to go ahead, and after they have worked out the system, join up with your organization and stick to it and give it a fair trial. That is the only way in which anything can be accomplished; for, after all, it is scarcely necessary for me to remind you that the problem is your problem. The Department of Agriculture cannot solve it for you. We stand prepared at any time to render any assistance we can in giving you information and perhaps assisting you with your campaign of organization if you decide to go ahead. We are prepared to assume our share of the work in that regard; but the business is your business, and the organization must be your organization, and you are the men to form it, and you are the men to make it a success.

Let me, therefore, simply leave the matter in your hands in this way, with the hope that whatever you may do may redound to your personal credit, to your own satisfaction and profit, and to that of your industry; and if this is done, I am sure that in the years to come yours will be the glory, yours will be the credit, and yours will be the gratitude of succeeding generations.

Mr. Sibbald: At your last Convention you appointed a committee to take up the idea of the project of Co-operation. The discussion was not very long and our instructions were not very explicit, so we hardly knew what to do. We hardly knew whether we were ourselves in favour of it; but we were appointed the committee and we went right ahead and put in a lot of time and work and have made a considerable advance towards co-operation if you decide to go ahead with the work.

We had a meeting after the session of the Convention when we were named as a committee to get copies of by-laws, contract forms and information from California and from Colorado, so as to have something to work on. Then, when we attended the meetings of the Experimental Union in Guelph, there were a number of sessions taken up with co-operative work and co-operative reports, it was thought it would be a good idea to have our committee there to educate them and enthuse them and get them going right; so we all attended at Guelph. After that, we appointed Mr. Millen, Mr. Holtermann and Mr. Colquette of Guelph to draft by-laws and the agreements, according to the Ontario law, as the Ontario law would not be exactly the same as that of California or Colorado, and some changes would be necessary. And a sub-committee was appointed to see the Minister of Agriculture and see what help he could give and what information he would help us to. This sub-committee was Messrs Holtermann, Byer and Sibbald. We met the Minister of Agriculture and were well received, and he generously promised to help us in every way possible, even financially, if we got, say, seventy or eighty per cent. of the output of Ontario to sign up that they would sell their honey co-operatively. That, of course, is still to be fulfilled, if we can do our part, which was that we must show by having about eighty per cent. of the output signed up, that we had enough to carry it on successfully and that we were all pulling along with this co-operative idea. I suppose the Minister's idea was that if we hadn't that many, we were divided amongst ourselves and were not sure whether we wanted it or not.

Then later on we had another meeting at Guelph, and we went over the by-laws as drafted by the sub-committee, and amendments were made by the whole committee, and they were then all approved by the committee as a

whole. It was then pointed out that, in order to get ahead, we would have to appoint seven provisional directors, and our committee had the power to do that, which had to be done before we could apply for incorporation. The provisional directors could apply for a charter, and, after that, go ahead and have members subscribe for stock. We went so far as to appoint the provisional directors. We also appointed Mr. Millen and Mr. Holtermann as secretary and organizer respectively, but Mr. Holtermann, after he got notice of his appointment, sent in his resignation; and Mr. Millen has been so busy with other work that he has never had time to go any further with this work. The rest of the committee were, like myself, very busy men, and so the matter just stood there.

We have the by-laws as drafted, and the agreement as drafted, ready to go ahead if the members of the Association wish to go ahead; but we take it that, as a committee or as a board of provisional directors, our tenure of office has expired.

MR. PETTIT: We have always been told that successful co-operation begins with the small organization. We have been taught that in connection with the Fruit Growers, and other organizations. I well remember the late Robert Thompson came to our meeting some years ago—he was a very successful man among the fruit growers—and said that three or four of us got together, sitting on boxes around the stove, and talked things over, and we agreed that amongst ourselves we would pool our crop and find a market; and we were successful in that way. Then as other small groups were formed and joined together, selling together or as smaller groups, until the idea was to form a larger centre from the smaller groups.

We have not such a thing. We have tried it again and again, particularly in 1913. We tried the local groups, and we had a number of County Associations that were keen on selling their honey locally, and then getting in the Central organization. But nothing came of it, and here we are facing the present situation. I am going to admit freely that the situation is quite changed.

MR. WEIR: I agree with Mr. Pettit in every way, that the co-operative movement has to come sooner or later if beekeeping is going to hold its place among the industries supplying foodstuffs for the table. At the present time honey is not being eaten as readily as jellies and jams and similar foodstuffs, and there is no doubt that we are very deficient in our advertising. These two problems can be handled properly only by means of co-operative advertising, because it is altogether too expensive a matter for the individual beekeeper to meet.

In view of the fact that we have organized foodstuffs efforts all around us, and it is marching away with our table trade as rapidly as it can. Take, for instance, such a staple as bread. You wonder why the bread makers need to put up signs all over the city streets to urge the people to eat bread; and they have the co-operation of the Fleischman Yeast Company of New York in it.

You go into a grocery store and ask, "Do you know much about honey?" "No." "Do you sell much?" "No." Why? Because people do not know very much about it.

I feel for the man who has had to unload his crop early. He has cold feet and has had to liquidate. The reason is not that the man does not want to stand loyally to an obligation, but it is because he has to face bills shortly and he must have money; and individually he is not in a position to get it in any other way than by liquidating. I think that is one of our greatest difficulties.

A man who has already established a business, looking at this co-operative

movement which is before us, sees it in a light something like this: Well, I have a well established market now and can sell all I can produce. I know the trade, and they know my honey, and I think I can take care of my future; therefore, why should I go in and help provide a market for the other man who has just come in? From the struggle for existence viewpoint, the large beekeeper is on tenable ground. But if it can be assured to the larger beekeepers that an organization of this kind will control a sufficient volume of the crop to practically influence the price on the market, they will be right there to help out and to lead the van, as it were. But the pooling of all the trade lines that they have acquired in a venture of this kind, you must admit, is a greater risk to them than it is to the smaller man.

If we face the facts in this spirit and help to show our appreciation by recording the fact that we are willing to contribute our part to the capital and to obey the trading rules promulgated by the society, as stated by Mr. Colquette, for the three years, which was spoken of as being necessary, I think it may be made a success. Speaking for myself and the co-operative honey selling movement, I would not commit myself to join a co-operative movement unless I could see that at least sixty per cent. of the known honey crop of Ontario was practically in the hands of such an organization, because I think it would be foolish to venture on a scheme of this kind without that assurance.

Mr. Millen then read the Agreement and also the proposed By-Laws of the Ontario Honey Producers Co-operative, Limited.

A lengthy discussion followed.

Moved by Mr. Sibbald, seconded by Mr. Holmes, "That we form a Co-operative Association along the lines suggested in the By-laws, Constitution and Agreement." Carried.

## PROVISIONAL DIRECTORS.

The following were appointed Provisional Directors: E. T. Bainard, W. A. Chrysler, William A. Weir, William Agar, E. V. Tillson, John A. McKinnon and H. W. Krouse.

## ELECTION OF OFFICERS.

The election of officers was then proceeded with and resulted as given on page 4.

## NEW USES FOR HONEY.

The President: If you have any new uses for honey we would like you to bring them in to add to those we have already received.

Mr. Millen: We have one sample of candy sent in by Mrs. C. E. Lewis, of Newmarket, called Honey Nuggets. Cut comb honey in small squares, about three-quarters of an inch in size; drain on a cake-rack; when drained, have ready some melted chocolate, cooled. That is, melted in a double boiler over hot water then plunged in cold water, so that it will not melt the honey. Take each square of honey in a silver fork and dip in the chocolate until well coated; then place in box until well set.

Take one small spoon of candied honey, place one shelled walnut in honey; fold over the honey.

MR. CHRYSLER: Honey makes one of the best dressings for belts.

THE PRESIDENT: I have something I might give you. In using peanut-butter, we think it is greatly improved by using a little extracted honey with it. It spreads better and tastes better.

Honey will make the best white vinegar.

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## THE JUMBO VERSUS THE TEN-FRAME LANGSTROTH HIVE.

"Resolved that the Jumbo or deep hive is more efficient in honey production that the ten-frame Langstroth hive."

Judges: Mr. Demuth, Mr Howe and Professor Crandall.

Five minutes time will be given for each speaker. The leader of the affirmative will be allowed three minutes for rebuttal. The affirmative will be led by Mr. Krouse.

MR. KROUSE: I would ask you to take note of that word "efficient." I take it to mean productive of effects. First. Economy in handling hives for extracted honey. For instance, where a colony has three supers on it, it would take five standard supers to equal the three Jumbo supers for the same amount of honey. In this way, you save a lot of time in handling supers to get the same amount of honey.

Second. We find in extracting, that we can extract from seven hundred to one thousand pounds more honey a day from Jumbo hives or combs than we can when we are extracting from standard combs. This, when you are a commercial beekeeper and have a lot of combs to handle, I consider a very great saving in time and cost.

Third. The difference in cost of production is not equal. The cost of one Jumbo hive with the frames is about a dollar sixty. The cost of a standard hive is about a dollar thirty. One Jumbo super will extract on an average about eighty pounds. One standard super will extract about fifty pounds. Three Jumbo supers will extract two hundred and forty pounds at a cost of four dollars and eighty cents, that is for the hive and racks; while the cost of five standard supers would be six dollars and fifty cents. This, you see, would be a saving of a dollar seventy per colony in favour of the Jumbo hive.

There is also a saving in the assembling together of these hives. You can nail up a Jumbo frame and hive just as fast as you can nail up the standard, and you have not so many to nail up for the reason that they hold more honey. I would put that saving at about fifty cents per colony.

When you are in the business on a large scale, there is a great saving in cost of the material as well as you save a great deal of time in the handling of this material

MR. MCKINNON: The points I wish to make in favour of the Langstroth frame and hive are these: First, the Langstroth frame has been the standard throughout the United States and Canada for years, and I am not afraid to say that there are more frames of that dimension in use to-day than of all other kinds put together, which speaks well for its popularity.

Then, the ten-frame hive is large enough for the man of ordinary strength to handle in his bee-yard, doing the ordinary work of the yard. It is also large enough to accommodate any queen early in the season, and can be enlarged at will to supply the needs of the colony.

But the best feature about the ten-frame hive is that you can control the swarming a good deal easier. By its use we are able to save about half

the time that is required to do this work. We can handle boxes, instead of handling combs, in looking for swarming control, as bees have the tendency to build their cells at the bottom of the comb, and they are very easily found in looking for swarming fever. The average man who wants to buy bees will pay just as much, and pay it readily, for bees in a ten-frame hive as he will in a Jumbo, which is another saving.

Then again, if you want to winter bees in double brood chamber hives, that is, using two brood chambers, we are able to do so; and it is an advantage when we are running out-yards. In this way we can see ten-frame hives and leave a surplus of honey at the out-yard, ready for the use of colonies in the spring. That saves transporting to the out-yards.

Mr. T. Shields: I think possibly the points I have to bring before you will confute somewhat those of the previous speaker, Mr. McKinnon. He mentioned, first, that you could control swarming better with a Langstroth frame hive. I question this statement. In the first place, when the swarming fever is at its height, if you are to control it with the Langstroth hive, you must use a double brood chamber to make space for the queen, and that means extra cost of time and labour, with a loss of efficiency in honey production.

With the Jumbo hive, you have plenty of room for your queen to lay, and, if necessary, she will lay to her full capacity, and you have a chance to bring out a realization of what a really prolific queen can do. In the Jumbo hive frame you have the indication of the queen or her ability to lay in a more natural circle, and she follows this and has a chance to prove it.

I could possibly go into some of the details as to the chance that a prolific queen has in a Jumbo hive. Basing these figures on the approximate size of the Langstroth foundation and the Jumbo sheet of foundation, we find that there are two hundred and seventy square inches in a Langstroth frame, and three hundred and forty-four square inches in a Jumbo frame. It has been figured out that there are twenty-five cells to a square inch; so that we have the number of cells in a Langstroth hive is sixty-seven thousand five hundred; and in a Jumbo hive we have eighty-five thousand, or in each hive we have a difference of seventeen thousand five hundred cells, using ten frames to a hive; or we could produce in the two hives with a good prolific queen, seventeen thousand five hundred more bees in the Jumbo than in the Langstroth hive.

Every thinking beekeeper realizes that the strongest colonies produce the most honey; and we must have strong colonies; and in this way we use the Jumbo hive, and we have a chance to produce strong colonies and have them ready at the time of the honey flow.

Mr. McKinnon referred also to the wintering problem. He maintains that you can use a double brood chamber. That may be all right, and again we lose sight of the word "efficient."

In the wintering problem you have less trouble with the bees; and with the Jumbo hive, I maintain, you can have stronger colonies to go into winter quarters, and every beekeeper knows that with strong colonies there is less trouble with the colony when it clusters maintaining its heat, and there is less consumption of stores; and you have the bees ready for the rearing of brood; and you have honey, which is better than sugar syrup or anything else for the rearing of brood in the spring.

Mr. J. C. Duff: Before taking up any of the points in support of the negative side, I would like to make a few comments on some of the points which have been brought out by the supporters of the affirmative. Taking the last speaker's figures, with regard to comb space, he estimates that there are sixty-

seven thousand five hundred cells in a ten-frame Langstroth hive, and eighty-five thousand in a Jumbo hive. Now, that is, of course, working on the assumption that all those cells are perfect, and could be used for brood rearing. This would figure out, as it takes twenty-one days for the worker eggs to mature into adults, that a queen would have to lay three thousand two hundred eggs, or a little better, every day in order to fill them. On the other hand, taking a Jumbo hive, a queen would have to lay four thousand eggs a day. Of course this is not allowing anything for a certain amount of honey which would necessarily be in there.

I maintain that if your combs are perfect, in a Langstroth hive, we have very few queens for which this ten-frame Langstroth hive is not large enough. You may run across a queen occasionally which would be an exception; but for the average queen a ten-frame Langstroth hive is large enough.

There is another point which comes in here in connection with the sagging foundation. I think almost anybody will admit that there is greater strain on the top part of the foundation in the Jumbo hive frame than there is in the shallow frame; and consequently there must be more imperfect cells and a larger proportion of cells that are not suitable for brood raising.

Then, following this along, in a Jumbo hive there is too much honey stored, that is the early honey, which we all know granulates; and the way I would think that it would work out would be this; that in a Jumbo hive you would have a considerable amount of candied honey. I know it worked out in that way in our locality. There was a considerable amount of candied honey in the tops of combs; and we all know what kind of trouble that gives.

There was another point brought up in connection with the lumber used in manufacturing those hives. If the hive is a ten-frame Langstroth or a ten-frame Jumbo, it stands to reason that no matter what size the combs are, the height is what governs the amount of lumber which is going to be used; and whether it is divided into five spaces or into three or four, it would take the same number of feet of lumber for the brood chamber and supers of a Jumbo hive as it would take for a Langstroth; the only difference being that narrower lumber, when we come to buy it, is cheaper than the wide lumber which is required for the Jumbo hive.

In connection with the central plant manipulation, where you are hauling combs full of honey from your out-yards in to the central plant, we all know how much trouble we have with the ends of the top bars breaking off. I know that we have quite a number of them break in that way, and if these combs in the Jumbo are as much heavier as they are said to be with the Jumbo hive, the difficulty would be increased.

Then, again, if you practice wintering in a cellar, with the Jumbo hive with the amount of honey it would have in our locality, at least since it has become a sweet clover locality, I would not want to handle them if they are as much heavier as it is suggested they would be, because I know our ten-frame Langstroth hives are quite heavy enough for me to handle.

MR. W. A. CHRYSLER: This discussion has become interesting, and probably as some of the others are taking up some of the points I may also take up a few.

Many years ago, a great many thought it was necessary to have an upper entrance so that the bees could go and store the honey into the supers and not go through the brood chamber and queen excluders. I tried that thing out, and made a lot of queen excluders with an upper entrance, so that the bees could go in above without going through the brood chamber. I found that the

bees which made use of that went through the entrance and down into the brood chamber with their honey and pollen, and afterwards carried it up again. So that, instead of not carrying the honey and pollen through the excluder at all, they carried it through twice. So, now, we want a brood chamber which is large enough to hold both so that it would be self-contained, so that we are not at the expense, probably eighty per cent. more, of making an extra brood chamber to make it a two-story affair. Then why not adopt the Jumbo frame, because it can be a self-contained brood chamber, summer and winter.

They carry the pollen and honey and store it as close to the brood-chamber as they can. Therefore you want an extra large brood frame in comparison with a ten-frame Langstroth, and where you have a shallow brood chamber, you are going to have more pollen taken up into your surplus or extracting combs, and you are going to have those combs injured from bee-moth. There is more liability to have the bee-moth bothering store combs. We know that the bee-moth would not bother combs if it were not for the pollen that is in them, consequently we want to eliminate pollen in the store combs.

As the previous speaker has said about hauling home honey for extracting, the Jumbo frame would be too large. Your brood frames are of the Jumbo size. The surplus combs for extracting can be according to your choice for size. You do not need to have Jumbo frames for your extracting supers. Shallow frames, the Langstroth size, or Jumbo size; or you can have the whole three sizes. You are not confined to any one kind, when you have the Jumbo brood chamber, you can have any one of the three sizes you may choose for your extracting frames.

JOHN T. WILSON: Before beginning my discussion on the subject, I wish to discuss some of the points given by our opponents.

In the first place, Mr. Krouse said that a Langstroth super held only fifty pounds of extracted honey. All I can say is that Mr. Krouse does not get them filled out, if that is all he can get out of them, for I have taken sixty-five pounds and more.

As for the swarming problem, I may say that I have 176 colonies at the present time, and I have had only one swarm from colonies in Langstroth hives in the past summer. I had three swarms from two-pound packages which I had got, but this was due, in large measure, I think, to the fact that I had neglected them. I did not think they would do very much, and I did not give them enough room. That was the only cause I could find for them swarming.

I have some colonies in Jumbo hives at the present time, and I find that they will store a rim of honey, the first honey that they gather in the spring, and that they will cross that rim of honey to enter the supers, especially in comb honey production.

If we had a double brood-chamber, and put on an extra super in the spring, they will take it off, and there is practically no honey left in the bottom brood-chamber. Perhaps the others do not produce extracted honey. I put on a double brood-chamber on top, then when the honey flow began all the dark honey was gathered, and I took that off and set it on a bottom board beside the other colony, and when that brood hatched out, I shook it into the original brood chamber, and that colony did not swarm, and they produced some lovely sections.

Mr. Shields mentioned about how many cells there were in a Jumbo hive. I venture to say that there is not a man in the audience to-day who can produce ten combs that are perfect for the queen to produce brood in. Therefore we argue that point is of no use, because if they are not perfect cells for the queen to lay eggs in, the bees will store honey there. We want honey in the supers.

If you have not a very prolific queen, they will store honey in the outside of the frames, where we do not want it. We have to have an extra good queen or honey will be stored in the brood chamber.

I will now touch on the points which I have selected for myself, and that is the weight of the Jumbo hive. Personally, I could not tier up those supers as I have seen them in the Bee Journals, six or seven feet high, without a windlass. I can sympathize with the ladies, for there are very few ladies in this audience who could lift a Jumbo super up into the air. The general way is to tier up the supers until they are all capped over.

If you do not use standard equipment, if you use two sizes of supers, it is not an efficient way of working. The frames would not be interchangeable.

If a frame becomes injured—of course, Mr. Chrysler manufactures frames and can get them cheaply—if you have to go to the supply people and pay ten cents apiece for frames.

THE PRESIDENT: "Mr. Krouse, the leader of the affirmative, will now have three minutes for reply, but no new matter is to be brought in."

MR. F. W. KROUSE: "My opponents say that a standard hive is big enough for a brood nest. I claim that he is wrong. Why do they use two?

They spoke about imperfect frames. They challenge anyone to produce ten perfect frames. I will challenge any one to find, out of 5,600 pounds of foundation, five imperfect frames, in two years building that we have had done in the past two years. The fault lies in imperfect work; if we wire our frames properly, we will get perfect frames and will not have any sagging.

They spoke of honey being stored on the top, as a rim. I claim that is good in the spring of the year, because we all have about two weeks of a dearth between fruit bloom and clover, and if the beekeeper will only take his hive tool, he will get a whole lot more brood, and I claim it is better put into the brood than into cans.

Then they said the lumber being deeper cost more money, I claim it is not enough difference to be mentioned. The prices I gave were on the cost of the lumber that we use.

They spoke of the weight of the supers. I think all beekeepers are pretty well pleased to have the heavy supers to lift. We are not kicking about them being light. One spoke about his getting sixty-five pounds, I think, out of a standard super. I gave you the average figures, when I gave you the figures as to the weight of the honey which we got out of these supers. We can get 110 pounds out of a Jumbo, now and again, but that is not the average.

Messrs. Sibbald, Pettit, Armstrong and the president and secretary were appointed a committee to interview the Department in regard to the increased grant for foul brood purposes.

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## PACKAGE BEES AND NUCLEI—THE SHIPPERS' SIDE OF THE QUESTION.

D. D. STOVER, MAYHEW, MISS.

We believe that each year brings a brighter future for honey production. Up until last year, almost all the surplus honey was dumped on the markets of the larger centres to be disposed of by men whose only thought was to get as much out of it as possible, and as quickly as possible, with little regard for the satisfaction of either the producer or ultimate consumer, and yet we do not care

to cast any reflection on these men, as they probably did as well as could be expected, and we believe the fault was more with us producers than with these men. Now that it has been hammered into us by the best writers of the day, that the producer must give thought to selling his product, as well as the production of it, we feel that the consumption of honey can be increased far beyond the present production, and that prices should gradually increase. We are optimistic enough over the future for the production of honey, to believe that, with a few difficulties removed, a permanent and profitable business, to both buyer and seller, can be built up in bees and queens.

Taking it all in all, we doubt if any breeder has a right to complain about the manner in which his customers treat him, though there are exceptions to this, and there are little things that the customer can do to help the breeder along and which will tend to make conditions better for the buyer. In the first place, the breeder has had too few reports of the failures of the bees and queens that he has shipped to get a good idea of what caused the failure, so that he could endeavour to correct the trouble, the majority merely stating that so many packages are dead, or about a certain part of the shipment was dead, so many queens missing, or some thing of the kind. Often they will state conditions, and leave it with the breeder to determine the amount of the damage.

If the party accepting the bees from the transportation company would take time to carefully examine them before he accepts them, a little time at the station examining them might save a lot of annoyance and loss. If there is any loss, have agents make notation on receipt, stating approximate loss, being sure to get it high enough to cover the damage. If cages are broken or torn, be sure to have him note this, in case you are unable to find any damage at the time of delivery, and it developes that they are damaged when you put them in the hives, go back and report it to the agent, as concealed damage, asking him to make notation on receipt. After you have put the packages in their hives, give the breeder as full a report on the condition of them as you can, stating what you think you should have as an adjustment, being sure to enclose the transportation receipt with the proper notation, not to verify your statement that the damage existed, but so that the breeder can file claim against the transportation company for the loss, if it was caused through their negligence. Never neglect to get the papers because you feel it was not their fault. The bees may have starved, but they may have been on the road too long, so that it was through the companies' negligence that they starved. If all would do this, the breeder could get through with his adjustments in just one-fourth of the time it now takes, and he would sustain no unnecessary losses.

So much for the losses that the breeder is financially responsible for; and he is responsible for about all that he can conveniently carry. While he may not be able to assume the responsibility for these losses, we can be interested in them to the extent to seek to overcome them. We want to make your purchases as profitable as possible to you. While it is most gratifying indeed to get reports where the bees and queens we have produced have made their purchasers good crops, yet it is far more important to both that the breeder should know about the failures so he can endeavor to correct whatever may have caused the trouble. If you think it was the queen, tell him something of her appearance and how much brood she had, if they failed to build up on account of bad weather or insufficient flow, all will be of mutual advantage to both buyer and seller.

We know that the buyers of bees have experienced untold loss and inconvenience on account of the breeders, some of which was unavoidable and no doubt some that was. However, we think that, as a whole, the breeders are getting

more efficient, and that you will not experience the trouble that you have had in the past.

For packages, we feel safe in saying the most successful way to handle the queen is to nail her in the package with the bees, so that she will not be liberated en route, and the same for a nucleus that will arrive within eight days from the time it was put up. With express shipments this will almost always cover the time in transit, but in case of car-load by freight with express from distribution point, it will not cover the time in transit plus the time in getting the carload up. There is always loss in introducing queens, either in time or queens killed, and most generally both, so that it is one of the biggest problems in getting up nuclei the usual way. To overcome this, we have, for an experiment, formed four hundred five-frame nuclei, two of the ten-frame hive body. These have queens reared late this season, and we contemplate shipping these queens early in the spring with three frames of brood and their own bees. We believe that these queens will prove the equal of young queens that have to be introduced then we hope that the morale of the colony will be better, besides if we can form our nuclei at the end of the season for the next spring's delivery, it will mean much quicker deliveries.

We are of the opinion that it would be to the interest of all concerned, where a community can use as many as seven hundred packages, to bunch their orders with one breeder and buy a minimum carload of three-frame nuclei and ship to a point that would be within truck haul of all interested parties. If this cannot be done, then the best thing, we believe, would be for the breeder to ship in carload to the most central point, unload, giving the bees a flight, and re-ship, by express. This would have to be arranged through an association or committee, as it is not likely that the buyers in a community would advise any one breeder of their requirements enough in advance to make the necessary arrangements.

One can readily see that the cost of production is greater on the nuclei than on the pound packages. This is offset to the breeder in the loss in transit. The cost of transportation is greater on the nuclei to the purchaser. We feel that this offset to the buyer in the value of the comb, the chance of a better arrival, and possibility in the value of the shipping crate.

When it comes to failing queens, we are at a loss to know how to account for this, and we will welcome as many reports and suggestions as customers will make. If caging, (though they stay in the cages a week to ten days) is detrimental, we have been unable to notice it. We use the same queens that we sell, in our own colonies, and it is seldom that we get a drone layer and very seldom that a queen is superseded under six months old, and very few under one year. So far as we are able to ascertain, it is only in certain lots that some are unsatisfactory, and the most of the trouble is west of the Rockies and in Canada.

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MR. PETTIT: We are opening up here a great field for rapidly increasing the number of bees in the country. There is a question which I think is not nearly enough impressed in our Conventions. I am not the least bit afraid of over-production or of more beekeepers, but I am afraid of crowding the pastures. To illustrate, take the last season. We had two yards put in in what we considered our territory, and a yard was put down between our two yards, and not two miles from each. That was not a new beekeeper, but an old-established beekeeper; he said that in his neighborhood apiaries were closer than that.

I have been watching this thing for a number of years, and have one case where an apiary of 250 colonies stored 25,000 pounds in a season, and they travelled 2½ miles before they could start work. Now, if bees can go that distance and gather honey in a district where we are not growing alsike for seed, and have no outstanding stores of honey, we need to be careful about crowding our apiaries. To be fair to all, I consider four miles is as close as they should be. There are cases where it seems impossible to avoid crowding closer. I have been guilty, and, I suppose, I should not say anything; but I wish to air my conviction at this convention, for the sake of new beekeepers and others who do not seem to realize the distance that bees will travel.

I know that Mr. Krouse is successful in producing honey by scattering small yards. I do not believe that a lot of his territory is any better than the territory that some others of us occupy who do not get the average that he gets, because he places his little yards, of 30, 40 or 50 colonies, pretty well scattered, in locations which often are not any better than other beekeepers would use to put in 100 or 150 colonies, and have yards around within two or three miles, and then complain that only in certain years they get a crop and other years do not get a crop.

We have no legal control of our particular territory. I do not suppose it should be necessary, if we all understand the situation fully, and will look on it from the ethical side.

Mr. Howe: I have experimented on this for a number of years. I have lined Italian bees for six miles. I have never found a black bee more than two or three miles away. The flight of a black bee is about two to three miles; but the flight of an Italian bee has been known to be seven miles. If there is anything to lead them on they will go a good deal further than you have any idea. Mr. Pettit has told us that they would go 2½ miles to where they had got the aroma of the clover. I can tell you as a fact that Italians will fly five and six miles; and you should not have your yards any nearer than that. I have had from 50 to 150 in an outyard, but I believe that 50 to 60 is better than more.

Mr. Krouse: Mr. Pettit said he was guilty, so I will give a little experience just to prove what Mr. Pettit said. The yard that he spoke about crowding was one of my own yards. This was situated by itself, and there were no other bees that I knew of within eight or ten miles, and it was always our banner yard. Mr. Howe told us yesterday that when we got a good crop we should not say anything about it. I told about it, and got people to take photographs. I think Mr. Pettit got word of it, any way he came down pretty close. Mr. Pettit's yard was about a mile and a half away, as bees fly.

Mr. Pettit: It is moved away.

Mr. Krouse: I am glad of it. The first year that was there, our yard did not come up to half what it had done before. That proves what Mr. Pettit told us, that if we get our yards too close, we cannot get the big averages.

A Member: The distances bees go for honey should be seriously considered. Bees will go out until they wear out their lives, and if the distance is great they will die the sooner. The nearer by, the stronger your bees will keep and the longer lived they will be.

Mr. Krouse: Last year I had quite a bit of experience with package bees and nuclei; and, as I said once before at this meeting, I found the nuclei not as good as you would think they would be. I had 100 nuclei come in the first car, that was supposed to come through in good condition. We had no dead nuclei in that 100; they were all in good shape; but Mr. Stover was too good to us, he put in too many bees in the nuclei; he put in enough bees to fill the space,

that is, there was not enough space to take care of the heat that accumulated from the bees, and that cut them off and all the brood that was in the combs when they left the shipping point was dead, both the larva and the capped brood. I would be sorry for the other carload which was supposed to come through in poor condition.

The four-pound packages gave us a much better average than the nuclei. They put in an empty comb which was supposed to be filled with honey or syrup when the 4-lb. packages were shipped. We found that the 2-lb. packages, shipped without any comb at all, gave us equally as good results as the nuclei. So that I do not think it will pay any of us to buy nuclei any more. The express on 100 nuclei was $195 odd. On 100 four-pound packages, it was $52.50. You see there was a great difference in the cost of the shipping.

MR. SMITH: I might explain that I was there at the time the car was being loaded. The nuclei which Mr. Krouse got were to be put in the car to come out at Hamilton, as he wanted to take them home by truck, therefore they were packed in last. There were a certain number of drifting bees which were going with Mr. Krouse's bees.

A MEMBER: A neighbor of mine bought 20 two-pound packages this last spring, which came rather late, I think about the 24th May; at the same time he got 20 two-frame nuclei, which I think cost him about $1 more than the package bees. I kept track of his yard pretty closely this summer, and the package bees just nicely built up for winter; the nuclei gave him just one ten-frame super.

MR. HOUGHTON: I have not heard anything said about the last car. I happened to have 40 nuclei coming in the last car, so you may be interested to learn how thay came out. We had them come to the village of Cookstown, about 20 miles this side of Barrie. It is quite a trip. There were four dead outright when they arrived; and later on we lost three or four queens and three more of the nuclei. The brood, as Mr. Krouse said a while ago, was dead, and we got nothing whatever from it. But I have a pleasant part of it to tell, too. They were wonderful bees to build up. We probably took a little special care with them, although we gave them no more bees to strengthen them; but from the nuclei which we had left,—not having any of that kind of super, as I was not using Langstroth at that time—we put sections on, when they got strong enough—we had fifteen sets of fully drawn, nicely capped sections; and after we had removed the sections, when the clover flow was over, I put on some of my own supers with drawn combs, and we had 30 or 40 pounds per colony of buckwheat honey from them. I increased them from the original amount I had ordered, and in fact, two over and I never saw bees go into winter quarters in better condition. We were well satisfied. As to buying more, I am not prepared to say; but I want to ask this question of Mr. Krouse, and those who got them: Did you find these bees a little crosser than you did your own bees? I might say I thought they were about the crossest bees I had ever handled. For color and for building up and for honey gathering, they seemed to be excellent, but a little cross.

MR. KROUSE: We found one of them the crossest of anything I had ever tackled in my life. I had an assistant with me, and we undertook to find the queen in that colony and clip her. I have always claimed that I never was bossed by a bee. I think I took more stings that day, before I found that queen, than I ever had in any other year. I did not go away, but I believe I should have. I did not say anything about the amount of honey we had got from these, because Mr. Howe told us not to tell. We got a wonderful crop.

MR. SMITH: I examined every one of the colonies put into the first car. My first ten days' job there was to introduce queens and see that the colonies were up to strength, and, if over strength, to reduce them. I did not find any of the cross ones when there; but I got some of them for myself. I found two of mine were the crossest of anything I had ever seen.

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## BEES AND THEIR RELATION TO FRUIT GROWING

P. W. HODGETTS, DIRECTOR FRUIT BRANCH, TORONTO.

Any of the members of this Association who have studied the subject of the pollenization of flowers through the medium of the bees, will realize the necessary work performed for the farmer and fruit grower in this way. To those of us who are fruit growers, vital importance is attached to the fertilizing of the blossoms in our orchards, as the crop depends somewhat largely on the completion of the process of germination through the agency of bees and other insects.

Flowers may be roughly divided into two classes, those that are self-pollinating and those that must be cross-pollinated. The former produce pollen which will fertilize the stigma on the same blossom, while the latter must secure the pollen from other flowers on the same tree or shrub, and generally from flowers on other trees or shrubs. The carrying of the pollen grains from flower to flower is possible in two ways. The first is by the wind, as in corn; but this is exceptional. The second way, and that usually employed by nature, is by insects, generally bees, in the process of gathering nectar from the flowers. Here, the pollen from the anthers is gathered in dust-like particles upon the feet, head and body of the bees, carried from one flower to another, and deposited upon the sticky stigma where germination begins.

The value of pollen carrying insects cannot be over estimated. It is safe to say that practically all varieties of fruits, especially apples and pears, even though some are apparently self-fertile, are benefited by having other varieties planted with them as pollenizers. A self-fertile variety of fruit is one that will set perfect fruit without the aid of pollen from another variety. A self-sterile variety, on the other hand, is not able to set fruit without securing pollen from another variety blooming at the same time. Both require the activities of the bees in pollinating the blossoms. From investigation it has been found that the greater number of our varieties must be classed as self-sterile or partially so, and as fruit growers, we require to plant our varieties so as to have more than one variety blooming at the same time.

In addition to the apple and pear, the following cultivated fruits and vegetables are pollinated by insects: Plum, peach, raspberry, blackberry, peas, beans, currants, grapes, squash, melons and cucumbers, while strawberries are partially affected. Undoubtedly the honey bee plays the most important part in this work, though some years wild bees are quite numerous and are of great assistance in the work of pollination. The trouble with wild life is that it is subject to fluctations due to weather and other unfavorable conditions, with the result that one year wild bees may be quite noticeable, the next year they are gone. While you as beekeepers have heavier losses some years than others, the changes are not usually very great, so that after all, we as fruit-growers must depend somewhat largely on the honey bee for our crops.

In the year of specially favorable weather conditions, and with the orchard in good shape to bear large crops, the apple very seldom sets more than from four to seven per cent. of the blossoms formed. Exceptionally favorable conditions sometimes give ten per cent. Peculiar results sometimes show themselves as the result of the weather during blossom time. With cold, wet weather, no crop worth speaking of has often resulted, because the bees would not fly freely in such weather. Heavy winds have caused bees at times to work only on the sheltered side of the trees, with the result that the crops are heavier on the one side than on the other.

Interesting observations were made in Kansas by G. O. Green on this point.

> "During the blooming period of Huntsman, when it was not blowing a gale, the wind was south or east. To find out how much truth there was in the theory, bees were counted on each side of the tree, so as to count as few as possible twice. During the time when Huntsman was in full bloom, with an east wind and the sun shining warmly, there were counted twenty bees on the west side and eight on the east. Taking the same tree, with the wind blowing at a rate of about seven or eight miles an hour, from the south, and small 'choppy' clouds flying, there were counted sixteen bees on the north side and five on the south.
>
> "On April 30th, Kinnaird was in full bloom and an east wind was blowing at a rate of ten or twelve miles an hour. The day was warm and sunny, and the bees were out in force. Five bees were counted on the east side, and ten on the west of one tree. And on another of the same variety, four bees were counted on the east side, and sixteen on the west. These figures cannot be laid to the bees' preference to sunshine or shade, as they worked in the full sunshine in the one case, and in the shade on another. There was not much difference in the temperature for the different days.
>
> "By watching the bees during the time when the work of pollinating flowers was being carried on, it was noticed that in every case, the bees chose the side of the tree most protected from the wind. The honey bee was the principal visitor, though other bees were noticed to be at work. But two bumble bees were noticed during the whole week that the work was being carried on. Six species of bees were noticed at one time on one tree. Bees were noticed to visit the same flower five or six times during the course of fifteen or twenty minutes, and it is safe to say that each flower was visited twenty-five or thirty times during the day, and could scarcely have escaped pollination from this source. Many other insects were seen to visit the flowers, to eat the pollen, to gather honey or to prey on other insects. In any case, they may have, to some extent, aided in pollination. The greatest agent of pollination is undoubtedly the honey bee, though in its absence other species would carry on the work to such an extent as to ensure a crop of apples, were the weather favourable for the work of bees during the blooming period."

## Injury to Bees by Spraying.

There is at present one difficulty in the successful keeping of bees that feed upon the nectar from orchard flowers, on account of the fact that spraying for the codling moth must be done after the petals have mostly all fallen, yet before the calix closes up. At this time the spray should be forced in the calix. If this is properly done and the bee gets the poison instead of the codling moth, it naturally dies the death intended for the other. Fortunately the period of nectar flow is over before the petals dry up and fall off, so that in practice there is really little danger of wholesale destruction of the bees from spraying with arsenical poisons at this time. Years ago when spraying first came into vogue, there was some misapprehension as to results, and a committee of fruit-growers and beekeepers was appointed to draft the law which still stands, known as the Bee Protection Act. The municipal clause is that no person in spraying or sprinkling fruit trees within the period within which such trees are in full bloom shall use any mixture containing paris green or any other poisonous substance injurious to bees. Our Spray Calendar is the official guide for spraying in the Province.

### Injury to Fruits and Trees by Insects.

At one time some fruit growers thought that bees would attack ripe fruits and destroy them, but this theory has been exploded long ago. Bees will feed on ripe fruits once the skin has been broken, but are incapable of puncturing the skin themselves.

Possibly the only form of injury that may be charged against bees and other insects is the transmission of disease germs, particularly those of fire blight, a destructive disease of apples and pears. The bacteria which cause this disease, enter through blossoms and young, succulent growth in the spring. Aphids or plant lice are responsible for the disease on the young wood, while any insect visiting from blossom to blossom can carry the trouble to these parts of the tree. There does not seem to be any way of preventing such attacks, and the growers themselves have the only remedy possible, in cutting out all disease infected parts of the tree, and destroying such early in the season. The beekeeper is not to blame if the fruit grower does not cut out the diseased wood and so prevent it being spread by the bees.

I am very glad to be at your convention again, and note that your numbers have increased very greatly in the last two or three years. I know that in the earlier days, when Mr. Pettit and I were looking after things, we did not approach to what you have in the last year, in connection with the handling of supplies. I understand you are thinking of taking a step further. You have a product which we, as fruit-growers, would envy you in the marketing. In the past two years, we have attempted, in the Niagara District, to handle our fruit crop. The first year it was not so bad, because the crop was short and the prices were good. This past year, there was an enormous crop, and owing to the lessened purchasing power not only here but in the west and in England, I have been told by fruit-growers that they would not go back to the old way of marketing the crop, with all the trouble and worry of handling the crop during the rush season.

Plums and peaches and the smaller fruits have to be sent to market as they ripen from day to day. Cold storage will help us in many cases, but in most cases the fruits have to be marketed immediately. You, on the other hand, have a product which can be kept for months and years. You people, through the small exhibit which was made in the Old Country this year, can work up a large market. When Mr. Pettit and I looked up that matter some years ago, the honey prices in Great Britain were low, and there was no use in advertising or doing anything in connection with the handling of our honey over there. Now things have changed. By the exhibit which was sent over by three of your members, you were able to clean up three out of the four prizes offered for honey. I hope enough that you will see your way clear to go into it to give it a very thorough trial.

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## QUESTION DRAWER.

Q. Having both Langstroth and Jumbo hives, which is preferable for comb honey?

Mr. Marwood: I started in a hive a little bit larger than the Jumbo this year. I found out that I had as good success, if not better than with the Langstroth. I allowed my bees to have two supers until one was practically filled with honey, and then I did as Mr. White said the other day, took off the hive

body and set the super down as a new hive body, and put my supers of full comb foundation on top of that, and had quite good success.

MR. HOUGHTON: Why is it that some packages will produce three times as much as others, when in the same condition on arrival?

MR. WHITE: Everything depended upon the queen. If there was a good queen with the package, they did pretty well. If the queen was not a good queen, the package bees did not do well.

MR. PETTIT: And there would be a difference according to the age of the bees.

MR. EYRE: In those packages, are we supposed to get mostly drones? Out of five packages which I got at one time there were two of the packages which I think had more drones than worker bees. I thought that was a joke on me. Two of the packages out of that five gave me a surplus. One of them did not make enough to winter themselves, and the other two barely scraped through.

Q. Is it, in a general way, best to pile up supers on a hive five or six high?

A MEMBER: I would leave the extracting to be done all together. I do not believe in continuing the extracting all through the season. You have enough work to do without extracting all the year round. I am presuming that we always have enough supers.

A MEMBER: If they were all Jumbo, you would need a lot of scaffolding and guy ropes.

MR. HOUGHTON: I was in Orillia, and Miss Murphy was running an apiary. If we have a demonstration meeting this year in Simcoe, I hope we may have it in her apiary. It is the most beautifully constructed, the most conveniently laid out, and the most nicely kept of any apiary I have ever been in. She has poles up and tracks running on the poles, and a derrick. She has the supers piled up away above her head; and she demonstrated to me, when I was there inspecting, how easily she could handle the supers. It would be worth your while, from a lady's standpoint, to go and see her apiary. She is making money out of it, and doing remarkably well, and had no disease, although I found disease in nearly every other apiary around there.

MR. KROUSE: The reason I leave them piled up is that I get a better grade of honey. It gets riper.

MR. HOUGHTON: We can never get our honey too good, and the longer it is left on, the better it is. We like to get it off about the time the dark honey starts to comes in. Of course, comb honey should be taken off as fast as it is finished.

Q. How does Mr. Krouse wire his Jumbo frames?

MR. KROUSE: We use four wires across, and then two wires down to the second wire from the bottom; and embed with the electric embedder, which we find has a great deal to do with good wiring, as it buries the wire right into the wax. If the wires are put in with proper attention, there will be no sagging.

Q. Is there a satisfactory electric-heated uncapping knife made? Who sells it? Who can answer that question?

MR. ARMSTRONG: One has been made. Mr. Disnay, of Haldimand, made one about ten years ago, and we used it in one of the demonstrations in Oxford County, and it worked very nicely. The only trouble was that if we continued working right along rapidly, the point of the knife would get too hot. It was not regulated. The current seemingly was too strong; but up to the time when the knife got too hot, nothing could have worked more nicely.

MR. PETTIT: We tested the uncapping knife at the time Mr. Armstrong speaks of, at the College, and found that if you started into a comb with your knife hot before you got half way down the knife was cold. It did not hold the heat to take off the whole slab of capping. Then while you were setting one comb down and picking the next one up, it would recover its heat and burn the honey which was hanging on the edge of the knife; and we decided it did not do the work as well as the steam heated knife.

Q. How to find a queen.

MR. EYRE: Set your hive over an excluder, on top of another hive, give them some smoke, and the workers will go down through the excluder, and you will only have the queen and a few drones left.

MR. BARKER: I have a little trick. All my work has to be done by myself, and I found that the use of a mirror, sitting on the other side of the hive, lets me watch both sides of the comb at the same time; and if the queen has a tendency to duck in underneath or through a hole in the comb, you catch her. Queens will try to keep on the other side of the comb to where you are, and it is quite a handy little plan.

MR. KROUSE: There has been nothing said about the amount of smoke to use when looking for a queen. If you use too much smoke, it is always difficult to find the queen after that. Use no smoke at all unless you need it, and you will find the queen nice and quiet and she will not run around to the other side of the frame.

Q. What is a good way to handle nuclei when received?

MR. KROUSE: Do not put them out in the middle of the day. When they have been confined in the cage for several days, if you put them out in the hot sun, they will be quite restive, and you would look for many of them to swarm out.

Q. How would you feed bees in a cellar?

MR. HOUGHTON: Feed candy.

A MEMBER: Some years ago I wanted to feed, and tried candy, and any colonies to which I would give candy in my cellar would starve, because my cellar is too dry. We try to give our bees enough honey to last through the winter; but sometimes even a heavy colony will run light in the spring. It may be there is some part of the cellar without proper ventilation. I have never tried to winter outside.

MR. KROUSE: If you put the syrup on good and hot, and pack it up well, it will warm the colony up. About three years ago I got a telephone message saying they had cut down a tree which had bees in it, and would I come and get the bees? I supposed the tree had just been cut down; but found the bees had been hanging outside the tree for two weeks, and were still warm. I took them home, and they took down 30 pounds of feed on one night. They did not winter, but I laid that to the fact that they had wasted their vitality.

A MEMBER: A man in Michigan some years ago was unable to sell his honey crop, and did not have the money to buy sugar, but he put his bees into the cellar, and fed them in January, after he had sold his honey. He fed them hot syrup, feeding a certain lot each day. The disturbance is not very great in feeding a thick syrup and letting them take it quickly.

A MEMBER: Would it be possible to remove two or three combs and pour your thick syrup into them, and put them back into the hive?

MR. KROUSE: I do not think it would be practicable. You would not put the syrup in the combs on which the bees are clustered, and they would starve before they would go over for it.

## OFFICIAL ORGAN.

By resolution it was declared that the *Canadian Bee Journal* be taken as the official organ for the Association for the next year.

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## GRADING HONEY.

G. L. Jarvis, O.A.C., Guelph.

I have talked to some of you in small groups, but have never had the opportunity of addressing the Ontario Beekeepers' Convention until now. The very fact that we have had a large attendance at this Convention shows a wonderful spirit of co-operation; because, after all, co-operation is not entirely for financial gain. If you look on co-operation as entirely based on financial gain, you will never make it a success.

Co-operative marketing is divided into two main branches, namely, management, on the one hand, and the product on the other, We have had considerable information given us on the formation and management of a co-operative company. It is my intention this afternoon to say a few words regarding the product side of co-operation, that is, preparing the product for market; and a particular phase of this marketing of the product namely, grading and standardizing.

I am going to talk of extracted honey. We do not produce a great deal of comb honey in Ontario, and most of the grading rules, &c., which we have at our disposal are for comb honey, and come from the United States; so that you see we will, to a certain extent, have to work out our own salvation in regard to grading extracted honey.

Grading and standardizing are not exactly the same thing. Grading has reference to the bare product, to the honey itself. It is the bringing together of different varieties of honey, or the separating out of different varieties of honey to make a product which we can put on the market with continuous uniformity. Standardizing has reference to the marketable unit or any part of the marketable unit, such as, for example, a crate of six-10 lb. pails filled with honey. You may have a standard grade of honey, a standard container, a standard lithograph or label on the container, and a standard grade. I just mention that, because you may get a whole lot of standardizing and grading if co-operation is once started.

Why is it necessary to grade our extracted honey? It is all honey; it is all pure honey; therefore, why grade it? If you take jam, it is all jam, in some cases it is pure jam, but it is graded; it is raspberry jam, strawberry jam, turnip jam, etc. It is put into grades.

Honey has the distinction, I believe, of being the only product that sits on the shelves of a grocery store which is not graded. It stands alone in that particular respect. I do not know of any other product that sits on the shelf of a grocery store that you do not know exactly what is contained in the package. Most of it is done through laws, and laws which are enforced throughout the country.

The first reason why we should grade honey is in order to be fair to the consumer. We have to cater to the consumer. We have been catering, in the past, to the honey buyer and speculator. It is time we started to cater to the consumer. To illustrate that, if you will excuse a personal reference, I had occasion

last winter to go into a store in Toronto and bought a five pound pail of honey. This particular store happened to be one of those busy Toronto stores where the clerks are kept very active; a large number of people were behind me, kind of nudging me around to get me out of the way. I asked for a five-lb. pail of honey. This pail of honey was brought to me. I asked them if it was clover honey. They thought so, but could not be sure; but I could not ask them to go to the back of the store and get a screwdriver and hammer to open it. So, I paid 23 cents a pound for it and took it home, and it was buckwheat honey! Now, that is the kind of thing that will certainly injure our honey trade. We must see to it that the consumer gets exactly what he pays for, and cater to the individual consumer. That is one reason why we will have to grade our extracted honey.

The second reason is to secure the maximum marketable price for our product. A honey buyer or even the owner of a grocery store will pay his maximum price under the present marketing conditions, so long as he knows that he is going to get 100 per cent. of what he wants. He may get it, but if he is not sure he deducts a certain percentage on the chance that he will not get exactly what he wants. One particular honey buyer mentioned that he had to deduct a certain amount because of one thing alone, and that was in the matter of crates; he had to re-crate approximately 50% of the honey he received before reshipping. Now, these deductions, of course, you are paying for. Not only that, but they are taken advantage of by the honey buyer to reduce his price.

The third is to make our market price more uniform. If we have a product that varies in quality, naturally our price will vary. It is bound to vary. This also is taken advantage of by the honey buyer in this way: Here is a beekeeper who has a poor grade of honey, and is selling that honey at a cheap figure. Now, as soon as that honey goes on the market at a cheap figure that brings down all the prices for all grades of honey, and it reduces the general market price. Then, again, if we are to secure accumulative results from advertising, we must have a standard product. Advertising is useless if it is only for one year. It must be carried over a number of years, and if you have not got the same thing to advertise from year to year, your advertising is absolutely useless. It is worse than useless, because you are advertising something in some particular year that you have not got. That is the fourth reason.

The fifth reason is, to give variety to our product. If we can introduce new methods of manufacturing different honey delicacies, we will add virtue to our market and aid greatly in the consumption.

Regarding the different points to be considered in grading honey, I will give you a score card which has been used in some cases for grading, showing you different points and their value. First, is color, with 30 points. The next is freedom from foreign matter, with 30 points. The next is density of body or specific gravity, with 20 points. The last is flavor, also with 20 points. The first two, color and freedom from coloring matter are given 30 points. That is mainly because they are visible to the naked eye. You can see color, and, especially if it is in glass, you can see if it has any foreign matter in it, provided the honey is not candied. So these two points are put at the top, and flavor and density below.

Now, regarding color. We have educated the people in Ontario to dark and light colored honey generally speaking. This is not so all over Ontario. In isolated cases, such as we get from the north, and one beekeeper mentioned a case here where he had been producing an amber-colored honey, and after producing the amber-colored honey for some years, he could not sell the white

honey. I have heard two or three cases where they have educated their people to prefer the amber-colored honey.

There are two or three inventions which aid us greatly in arriving at the color demanded by the particular grades. This, which I show you, is the Root Honey Grader, composed of five pieces of colored glass, of different colors, representing the different grades of honey. The different colors are all represented in the different colors of the glass. With this they send two sample bottles into which you can put the sample of honey you wish to test for color in the grader; and then you decide by placing the sample bottles in different positions, the color which it comes nearest to. This grader goes from a water white honey to a dark honey.

In working this grader or one of this kind, you must always put your honey to the right side; that is, to the darker side. If your honey comes in between "water white" and "white," it goes as "white." If it comes in between "white" and "light amber" it goes in as "light amber." You must always grade to the right or to the dark side of the grader. That is to make sure you are on the safe side, so that if any one benefits it is going to be the consumer, and not yourself.

I have here this other grader, along the same lines, on the same principle, excepting on a somewhat more elaborate scale, and instead of the glass we have a liquid in the different vials here showing the different grades of honey. It works the same way as the Root Grader. It is called the Lewis Honey Grader. It was invented, I believe, by Mr. Rouchfaus, the manager of the Colorado Beekeepers' Association. It is comparatively a simple matter to arrive at the proper grade with a grader of this description.

Wherever you have a liquid use in grading composed of different colors of liquid in the bottles, they must be kept in a dark place, because liquids of any description, as they tell us, will fade to some extent if subjected to strong sunlight. Therefore, we try to keep the grader away from strong sunlight and in the dark when it is not in use.

I have a couple of samples of honey which I have been asked to grade for color. This one, as you see, is quite a light honey. It is composed, I believe, mainly of sweet clover. It is rather difficult to grade these samples because these are not the same size of bottle as the representative sample grading vials here; but at the same time you can get an idea of just where it would stand. I believe, if it were put in the proper vial, it would approximate this grade, which is "pure sweet clover," and would go as a white honey, according to the Lewis grader. It is almost the extra white, or as white as any honey we have, practically water white but not quite. It is just a shade over, and, therefore, we put in as white honey. That would be white honey.

This other is also very difficult, on account of the shape of the bottle in which it is contained, to decide exactly. It should be poured out into the round bottle supplied with the grader, in order to come to a definite conclusion. However, it is just the principle which I wish to show you. Again, it is a little darker than the "extra light amber," and not as dark as "light amber," but keeping to the dark side in all cases, it would go as a light amber honey.

Now, these are simply aids in arriving at the color which honey should have under different grades.

Then, in regard to freedom from foreign matter. We have a large number of samples sent into the office at Guelph this year, and I believe we have had more difficulty in securing a sample free from foreign matter than anything else. Apparently there is a lack of proper straining of honey. Now, when you strain

honey, if you strain it through one thickness of cheesecloth a half dozen times it is not very efficient; but if you put two or three thicknesses of cheesecloth together, you will take out practically all the foreign matter. The foreign matter consists mainly of bits of wax and pollen.

Then, in regard to density or body. At the present time, we are trying at the College to work out, if possible, a definite specific gravity or density at which honey will have to be to prevent the fermenting bacteria working.

I notice that in most American grading rules they state that honey should weigh about twelve pounds to the gallon—twelve or over—at, I believe, around 60° F. Now, I do not know how much work has been done along that line, perhaps Mr. Demuth could enlighten us on that, and how they arrive at twelve pounds to the gallon as a figure to prevent fermentation.

MR. DEMUTH: That is about what the honey averages, so that it will not begin to ferment when about a year old. In other words, when honey weighs a little less than twelve pounds per gallon, we expect, if it is not sealed until the second year, that it will commence to show some evidences of fermentation. It makes a big difference in the way the beekeeper harvests it when he takes it off the hives, and also in the rapidity with which the honey is gathered. Of course, some eat the honey when it is taken off, and that prevents trouble. In the West in the United States, honey is always as heavy or heavier than twelve pounds per gallon. And that may have been influenced by the weight of the honey in the West.

MR. DUNN: Of course the United States gallon is smaller than our gallon.

MR. JARVIS: We are trying to arrive at a definite specific gravity which honey must have before being put on the market. If we can arrive at a definite figure, we will take some steps to keep honey off the market which does not arrive at that standard.

Again, in regard to the flavour, we have to cater to the consumer. So that flavour will certainly have to be taken into consideration to some extent. We can usually get the flavour from the flowers from which the honey has been taken, or the approximate flavour; so that we should try to take that into consideration in grading honey.

The flavour of honey can very easily be destroyed by heat. As I think most of you know, the flavour in honey is due to alcohols. You all know how readily alcohols evaporate, so that when you heat honey beyond 150 to 160 degrees Fahrenheit, you drive off these alcohols and the flavour deteriorates. Then, too, if you use excessive amounts of smoke, of course, you will also spoil the flavour. We are not bothered with that to any very great extent since the introduction of the bee escape. We do not need to use the smoke in taking off the honey that we used to use.

If a co-operative company starts operation, and we are asked to send in samples to that company, we must, by being fair to ourselves and fair to the company, in all cases send in a representative sample. That sample must be a representative sample from each individual tank, because the tanks of honey certainly will vary to quite an extent in extracted honey. Then again I would also suggest that part of the sample come from the top of the tank and part of it from the bottom, to secure a uniform or average sample of the honey you have to sell. Also state how much of that honey you have, or how much that particular tank holds from which you took that sample.

With grading honey it is going to be necessary for a large number of beekeepers to use tanks who have never used tanks before, and do not know their real value, because it is next to impossible to secure proper samples for grading

when you simply let the honey run out of the extractor into the pail and say it is ready for market. You will have to use tanks in most cases, in order to get at the different grades that you have, to put at the disposal of the company.

Now, as to the size of the sample that you would send in from each tank, provided the sampling is not done at your point of shipping. I believe the Colorado beekeepers follow the practice of grading carload lots at the point of shipment. Parts of cars are shipped into Denver, made up into carload lots and re-shipped. So that, if there is not enough honey in any one particular locality to make a carload, you may be sending into the co-operative company samples of your honey; and from what I can gather, the usual practice is to send in a sample in a two and a half and five pound container. From a small tank or 400 to 500 pounds, a two and a half pound container should be sufficient. From a large tank, it would require a five pound pail to get an average sample from the tank.

When shipping sixty pound containers, two to a crate, be sure that the crate is a little larger than the container. The crate should be nearly a quarter of an inch larger than the container, and also with a wooden partition between the two cans; because when the honey candies, of course, it bulges out the container, and where you do not allow a little space, the crate will have to be broken in order to take the cans out.

The number of grades which will be necessary in extracted honey will be dependent, to a great extent, on the demand for those particular grades. Personally I am of opinion that approximately three grades in Ontario will be sufficient for a start. If we do some exporting it may be necessary to compete grade for grade with honey exported from other countries. But for home consumption, at the present time, it seems to me that three grades will be sufficient, because we shall certainly have to keep our grading simple. One advantage that we have in honey production over the production of fruit is that we will have a simple grading system.

Now, in regard to Association pails. If the Association has a particular pail of their own, they should only allow a beekeeper sufficient pails to look after his own particular crop, and they should take note of all Association pails left on the beekeeper's hands at the end of the season as compared with his output. The idea is that we must know what honey is being put in Association pails. The design should be a standard one, and registered.

Most beekeepers find it rather expensive to bottle honey, and that is the explanation of why we have not a great deal of bottled honey on the market. But when done in a large way, costs are cut to the minimum, and we may expect quite a trade eventually in bottled honey. It might be necessary, perhaps, to discover in our grading if we have a variety of honey in Ontario which does not readily candy, either a variety or a combination of varieties, to use for our bottling trade. Bottling honey adds variety to our product, which we sadly need at the present time.

MR. WEIR: We have been following practically the lines that Mr. Jarvis has put before you. We started with the Root grader and have been using it for two years. We have found, however, that so far as our trade is concerned the Root grader is a little on the dark side. That is, we would like to see the light amber a little lighter. These are the four different grades which we have established for our customers. We do not call our honey "clover." There has been a good deal said regarding calling your honey what it is. Can any man tell me definitely, when he is getting white honey, that he has got white clover honey? One year he is going to have some basswood in it, another year

some thistle. And, in the north country they have fire weed; and yet when these honeys get to the western markets they are all called "clover honey." Is that right?

I admit that our process of working is very much in its infancy, but I am thoroughly satisfied with what Mr. Jarvis has put before you, that it is absolutely necessary that we educate the public to a standard of honey, and until we get that properly fixed, we will have the deplorable condition of beekeepers sending in a dark amber honey and telling you it is clover honey.

MR. COUSE: I think grades can be established, but with the variation of your honey each year there is one difficulty. Would you have a grade made for each year, or an established grade for all time? In growing other things, such as grain and seed, they will go out through the country in the fall and collect samples from many districts and bring them all together before a committee and consider which is the representative sample of the country. There is just the question whether or not you would do that with honey. My own impression is that that would not work very well, because if you send out a No. 1 honey, I should think you would have to keep it in that class year in and year out, because that is a grade of honey which runs from one year into another, and the market should be established on that point. Otherwise, you talk about your No. 1 honey, and the consumer might consider what you termed a No. 1 honey to be a No. 2 or a No. 3, according to his taste. It may be all white, but those who are having experience with sweet clover honey, I think the average man to-day would be quite inclined to keep away from that as No. 1 honey, on account of the tartness or whatever you may term it which it possesses, and the inclination to spoil or ferment. You will have to be cautious right there. Your sweet clover honey will spoil quicker than other clovers. I am not sure that I would put a medium sweet clover in No. 1 or not. I would not do it, according to my own feeling. You have that point to contend with. You may get your colouring all right, but I think you may make three or four grades, and that would probably be enough. Just as in the alsike clover seed there is the No. 1, No. 2, No. 3, and then there is the rejected. No. 1 extra contains practically no weed seeds per ounce; then No. 1, so much, No. 2, so much, and it goes on in that way.

My own impression is that if I were going to buy a carload of honey to-day, I would buy as white honey alsike to suit my liking. When you come to buckwheat honey, you are going into a different class of honey, which, no doubt, certain sections demand and make use of.

I think you can grade honey, and that it is a very good thing. But whether you should establish a grade from year to year or a continual grade, may be another question. I think it should be continual.

MR. TILLSON: It seems that the wholesale buyers of honey do not always agree among themselves as to what the grade is. I had an experience of this last year. I sold a lot of honey to a large wholesale house, and I had it graded as light amber. The price was agreed upon upon that basis, and I shipped it, first taking several samples, because I feared there might be some trouble. The honey arrived at destination, and they wrote me that the honey was good and the pails were all right, but the grades were below the grades at which I sold, and they would dock me so much—I think it was a cent and a half. I was not satisfied with that, so I sent some of my samples to three of the best honey graders I knew, including the A. I. Root Company. I received replies. I presume the A. I. Root Company graded according to their grader; at any rate, their ideas and mine were identical. I wrote the company that bought

the honey that I had done this, and that the A. I. Root Company had certified that the honey I had shipped was the grade I had sold. They replied that made no difference to them. I could either leave it with them or take it away.

Then I sent to the G. B. Lewis Company, and got their grader. I had no feeling against the wholesale honey house, as I thought they had treated me according to their lights, and not according to mine. I wrote to that house that I had another lot of honey that I wanted to sell, and that I graded this honey as extra white, and my price was so much. They said to send a sample, and I sent a sample, as I had done the last time. I shipped the honey, and along with my bill I wrote a letter saying, "I do not intend to take a lower price than you have offered and I have agreed to take. I have a honey grader made by the G. B. Lewis Company and this honey according to that is 'white'." And they paid me my price. That honey may have been according to their ideas. I do not know. I do not claim to be a large honey producer, but I believe that to a honey producer a grader is worth all that is paid for it. If the producer is honest with himself and grades his honey according to the grader, there will be very little come-back from the buyer.

Mr. Hoshal: In one jar is a white cream candy; in the next one is maple cream; and in the next one is dark chocolate. Let us grade those according to your honey grader, if you will. One grades water white, and the next amber, and the other dark. Now, which is the better quality of candy? We are giving the impression that the dark honey is of inferior quality. I contend it is not so.

Mr. Weir: We have found a growing tendency in various localities to send in orders for particular kinds. We do not, by any means, give the impression that the white is the best honey. My impression is that you want to give the consumer just what he wants, and then make him pay for it. We do not charge the same price for the different grades, but my point is that if the consumers wanted more of the light amber than of the white, we would charge more for the light amber than for the white.

Mr. Hoshal: My point was that the beekeepers here would give the impression to an outsider coming in and hearing the discussion, that the dark honey is an inferior honey.

Mr. Neil: Before you call on the next item of business, there has been nothing said or done in regard to the Association securing honey containers for next year. We do not know whether the co-operative association will be in business in time to look after that for us. I think it would be in order to move that the executive of the Beekeepers Association procure ways and means by which the Association may purchase containers for their members for 1923. If the co-operative association is organized they will probably do it.

Mr. Shields: I will second that.

The motion having been put to the meeting was carried, and was so declared by the President.

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## REPORT OF THE HONEY EXHIBIT COMMITTEE.

Mr. Couse: I do not think there need be any lengthy report. The Honey Exhibit Committee is appointed by this Association, and if you want to put up an exhibit in Toronto, New York or anywhere else, they have authority to do it. It is not expected that there will be more than two exhibits, one at the Canadian National Exhibition, and one at the Royal Winter Fair.

There is no doubt that the exhibit at the Toronto fair has increased the consumption of honey in Toronto very greatly. Almost every grocer of any importance in Toronto is carrying honey. At the Canadian National Exhibition, the people can see the honey, and buy some and take it home, and that increases the demand for honey. The Committee has to be governed by the funds that they have for use. No doubt, if they had had a thousand dollars, they could have put on a larger exhibit. There was a large amount of honey sold, which went well on the way towards defraying the expenses. I do not think we need go into the details.

At the Toronto Winter Fair, the exhibit was put up again, and it was considered by those who saw it very tasty and appropriate by the management of the Fair and by others.

There was a small deficit at the Canadian National, but to-day I was speaking to the representative at the Royal Winter Fair and they have granted us enough to cover all our deficit. They will make us a grant of a couple of hundred dollars. We believe in it and will go on. We are not going to use any more money than necessary. Mr. Westervelt went to Chicago to see how the Chicago Fair compared with the Royal Winter Fair, and he says that as a matter of beauty and show, there is no comparison. This was a show of beauty and entertainment, while that at Chicago is of a little different nature. The Royal Winter Fair was a pleasure and a credit, and it is of considerable satisfaction that we had something to do with what was the best show of its kind in the world.

Somebody should make a reference to the fact that there were some samples of honey sent to the dairy show of the British Empire, at London, England, and I can tell you that Ontario got three prizes there over all the British Empire, and Mr. Sibbald got first in that whole show. (Applause). This is something of which you have a right to be proud, and you cannot help but be proud of it, and I believe it was Mr. McIntyre who got third, and Mr. Byer was very highly recommended, which means a great deal, and you can afford to be proud of yourselves, and you will take a lot more interest and keep things moving along a little more because of the fact that you have been encouraged by reason of your success. I think these gentlemen, Mr. Sibbald, Mr. Byer and Mr. McIntyre, are to be congratulated. It is not only Mr. Sibbald, but the Province which is honoured.

---

## REPORT OF THE HONEY CROP COMMITTEE

Mr. Sibbald: We had our meeting a little earlier this year. In some parts of the Province the crop is off earlier than in others, and it is pretty hard to strike just the right time. The average crop at the time of our meeting was not as large as it would be at the end of the season. The price was set, and, comparing the price set with the price obtainable, we set the price too high. But, if the beekeepers had stuck to the price, I do not know that it would have been too high. There were two large beekeepers at the meeting by our invitation, and they had orders for as much as six carloads of honey at 15 cents, f.o.b., and it seemed that it would be a foolish thing for the committee to set the price lower than they could get for carload lots. I think that influenced the Committee a little in setting the price as it did.

Mr. Holmes: I may say that nothing has been placed in my hands which would form a supplement to what was handed in yesterday, so that the report of yesterday is full and complete, as far as I know.

## RESOLUTIONS

MR. MILLEN: The resolutions which were left over were:—

(4) We would recommend that the plan of purchasing bees and queens through the central office of this Association be continued during the coming year, 1923.

(5) We would recommend that negotiations be entered into with manufacturers with a view to supplying honey containers for the season of 1923.

MR. HOLMES: The substance of No. 4 was formulated and adopted by this Association some years ago. Personally, I have something to do with it, and it has been a source of safeguarding and a source of economy for the members of this Association during the time which has elapsed since it was first adopted. Personally, I think it should remain in force and in operation in this Association, for the help, protection and economy of our members.

MR. MILLEN: If the Convention should decide to take any action in regard to clause 3, we might say that within a very short time after the fire in Northern Ontario, we wrote to all the members of the Association that we thought might be within the region of the fire, and we have on file at Guelph letters showing that some of them lost their entire apiaries, honey houses, and in fact the whole of their equipment.

A MEMBER: I think I would be remiss if I did not say a little about the fire up north. We had with us yesterday and the day before, Mr. E. J. Hand. He told me that if everything had gone all right, he would have been able to pay his debts by the spring. Two years ago he lost his wife, and in the late fire he lost his bees and everything else. I asked him, "Are you going back?" "Why, yes," he said, with a smile across his face, "as soon as I can get another suit of clothes." I know five or six who lost all their bees. I think it would be a wonderful help to them, if we could do something for them.

MR. WEIR: The circumstances in connection with this fire seem to justify the action, and I take much pleasure in supporting the motion already on the paper, and adding the suggestion that a subscription list be opened at the secretary's office, and that whatever particulars may be thought proper be published in the *Bee Journal*, and that subscriptions are to be sent directly to the secretary, and the list published in the *Journal*. I would move accordingly.

J. D. BRUNNE: Knowing the north as I do, I am glad to second the motion. One member had about 110 colonies, and he lost all his buildings and supplies, and about five tons of honey, and every bee.

The motion that a subscription list be opened at the central office in favour of those beekeepers who have lost their all by the fire in the north, was then put to the meeting by a standing vote and was carried unanimously.

MR. WEIR: We have had the pleasure of having with us George S. Demuth, to address us and give us information on a couple of topics, and I think we are and ought to be particularly grateful to him, and I would move a hearty vote of thanks to Mr. Demuth, seconded by Mr. Holmes, with a hearty invitation that he return. (The motion was carried with hearty applause.)

The meeting then adjourned.

Ontario Department of Agriculture

# ANNUAL REPORTS

OF THE

# DAIRYMEN'S ASSOCIATIONS

OF THE

## PROVINCE OF ONTARIO

## 1921 and 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO
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1923

PRODUCED BY
The
United Press
LIMITED
TORONTO
CANADA

*To His Honour* HENRY COCKSHUTT,
*Lieutenant-Governor of the Province of Ontario.*

MAY IT PLEASE YOUR HONOUR:

I herewith present for the consideration of Your Honour the Annual Reports of the Dairymen's Associations for 1921 and 1922.

Respectfully yours,

MANNING W. DOHERTY,
*Minister of Agriculture.*

Toronto, 1923.

# CONTENTS


PAGE

INTRODUCTION ..... 5

ONTARIO BUTTER GRADING STATION ..... 7

**1920**

DAIRYMEN'S ASSOCIATION FOR EASTERN ONTARIO:
- Officers for 1921 ..... 8
- Financial Statement ..... 8
- Annual Meeting ..... 9
- Dairy Instruction and Sanitary Inspection: G. G. PUBLOW ..... 11
- Creamery Instruction: L. A. ZUFELT ..... 14

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO:
- Officers for 1921 ..... 15
- Financial Statement ..... 15
- Annual Meeting ..... 16
- Dairy Inspection: F. HERNS ..... 17

**1921**

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO:
- Officers for 1922 ..... 20
- Financial Statement ..... 20
- Annual Meeting ..... 21
- Grading in Dairying: HON. W. R. MOTHERWELL ..... 22
- Dairying Instruction and Sanitary Inspection: G. G. PUBLOW ..... 23
- Creamery Instruction: L. A. ZUFELT ..... 27

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO:
- Officers for 1922 ..... 28
- Financial Statement ..... 28
- Annual Meeting ..... 29
- Dairy Instruction and Sanitary Inspection: F. HERNS ..... 31
- Creamery Instruction: F. HERNS ..... 32

**1922**

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO:
- Officers for 1923 ..... 35
- Financial Statement ..... 35
- Annual Meeting ..... 36
- Address: HON. MANNING W. DOHERTY ..... 37
- Dairy Instruction and Sanitary Inspection: G. G. PUBLOW ..... 39
- Address: HON. DUNCAN MARSHALL ..... 44
- Needs and Possibilities of Ontario Dairying: GEO. A. PUTNAM ..... 47

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO:
- Officers for 1923 ..... 52
- Financial Statement ..... 52
- Annual Meeting ..... 53
- Dairy Instruction and Sanitary Inspection: F. HERNS ..... 56
- Importance of Marketing Organizations: J. B. REYNOLDS ..... 61
- Looking Backward: PROF. H. H. DEAN ..... 65
- Address: W. BERT ROADHOUSE ..... 67
- Relation of Cream Grading to Improvement in Quality of Butter: F. A. KEYES ..... 69
- My Experience in Cream Grading: R. A. STRATTON ..... 70

# Dairymen's Associations of Ontario

## INTRODUCTION TO REPORT.

The non-appearance of Report of the Annual Conventions of the Dairymen's Associations for Eastern and Western Ontario, held in January, 1921, and covering the activities of the year 1920, soon after the Conventions were held, was due to the difficulty in getting printing done with dispatch. Much publicity was given to the proceedings by the press at the time the conventions were held. It is thought well, however, at this time, to present in a combined Report certain portions of the proceedings of the annual gatherings covering the work of the Associations and the activities of the field staff of the Dairy Branch of the Provincial Department of Agriculture for the years 1921 and 1922. The portions printed will be of value as a permanent record.

DAIRY STATISTICS FOR THE PROVINCE OF ONTARIO FOR THE YEARS 1920, 1921 AND 1922.

| | | No. of Factories | Pounds | Value |
|---|---|---|---|---|
| Cheese | 1920 | 886 | 92,847,769 | $24,615,290 |
| | 1921 | 869 | 103,432,696 | 18,676,380 |
| | 1922 | 845 | 92,709,285 | 15,037,284 |
| Butter | 1920 | 195 | 37,148,898 | 21,245,664 |
| | 1921 | 211 | 43,471,532 | 16,680,247 |
| | 1922 | 212 | 52,729,166 | 18,547,954 |
| Condensed Milk, Powdered Milk, Casein | 1920 | ..... | ..... | 14,000,000 |
| | 1921 | ..... | ..... | 8,500,000 |
| | 1922 | ..... | ..... | 5,500,000 |
| Disposed of by Factories, Creameries, Condenseries and Milk Powder Plants in the form of Ice Cream, Milk, Buttermilk, Cream, Whey, Soft Cheese, etc. | 1920 | ..... | ..... | 11,000,000 |
| | 1921 | ..... | ..... | 5,000,000 |
| | 1922 | ..... | ..... | 7,000,000 |
| Farm Dairy Butter, Milk used on farms, Town and City Milk Supply, Ice Cream, etc. | 1920 | ..... | ..... | 35,000,000 |
| | 1921 | ..... | ..... | 25,000,000 |
| | 1922 | ..... | ..... | 24,000,000 |
| Total value | 1920 | ..... | ..... | $105,860,954 |
| | 1921 | ..... | ..... | 73,856,527 |
| | 1922 | ..... | ..... | 70,085,238 |

### DEPARTMENTAL SERVICES.

The Provincial Department of Agriculture maintains two dairy schools, one at Guelph and one at Kingston, a grading station in the Municipal Abattoir, Toronto, and a staff of instructors and inspectors, besides furnishing literature along dairy lines. The staff of field instructors and inspectors includes the following:

(1) 33 cheese factory instructors who go from factory to factory throughout the manufacturing season, from April 1st to November 30th, giving instruction

in manufacturing methods with a view to producing uniform high quality goods. In addition to acting as instructors, for the past two years they have done the testing of the milk under The Dairy Standards Act for over 90 per cent. of the cheese factories.

(2) 6 creamery instructors.

(3) 4 men who devote their time to checking up tests made in creameries, cream buying stations, and cheese factories in which Government employees do not do the testing, milk powder factories, and condenseries.

(4) A butter grading staff of five men.

In addition to the above, bacteriologists and chemists at the Agricultural College and Queen's University are available to assist in experimental and investigational work.

The literature available embraces the following:

Bulletin No. 266—"Cheese and Butter Making."
Bulletin No. 253—"Dairy Cattle."
Circular No. 19—"The Babcock Test."
Circular No. 20—"Cool, Sweet Milk Makes Most and Best Cheese."
Circular No. 21—"Care of Cream on the Farm."
Circular No. 22—"Why should the Milk of the Individual Cow be Weighed and Tested, and Records Kept of the Results?"
Circular No. 26—"Ice on the Farm."

The Provincial Government also gives financial aid to the Dairymen's Associations of Eastern and Western Ontario, and the Ontario Milk and Cream Producers' Association.

All this service, except a charge of 50 cents per patron for the season for testing milk in the cheese factories, is free to the producers and manufacturers.

It would appear that a great many producers do not realize that they have a responsibility in producing first-class raw material, both milk and cream, if the service available is to be made effective.

There are in Ontario a great number of first-class cheese factories and creameries, properly equipped and in charge of competent makers; while, on the other hand, there are a number of small, poorly equipped manufactories which have not the volume of business to secure or retain first-class men to take charge of the plants.

The great need of Ontario Dairying at the present time is the establishment of manufacturing plants upon a basis which will ensure a sufficient volume of business in well equipped factories and creameries to make it possible to carry on along lines which will make for quality and permanency. We cannot expect to be successful in competition with other countries unless the producers generally furnish high quality raw material. There is a great need also for more efficient marketing methods.

The purpose at this time is simply to point out the situation and need in the hope that those most directly concerned, the producers of milk and cream, will take the necessary action to establish the industry upon a business-like basis. The Government can give valuable assistance, and has a grave responsibility, but there must be co-operation and a deep sense of responsibility on the part of the producers and manufacturers if the industry, which means so much in Ontario agriculture, is to be developed as its possibilities and importance warrant.

GEORGE A. PUTNAM,
*Director of Dairying.*

## ONTARIO BUTTER-GRADING STATION

At the urgent request of the dealers and manufacturers of butter, and after a season of investigational work as to the needs of the butter industry, the Government opened a Butter Grading Station at the Municipal Abattoir, Tecumseth Street, Toronto, on May 1st, 1917.

Owing to the very large home market, through which a very large percentage of the Ontario butter was marketed, it was felt that the sample-box system was the system most suitable to our conditions.

Creameries entering for grading were asked to forward by express or refrigerator car, to the grading station, a fourteen-pound box of each churning to be graded.

The samples, after being thoroughly cooled, so as to be in the best condition, were graded, and the report of quality, or score card, promptly mailed to the creamery.

A special system of marking the boxes was adopted, using serial numbers for the creameries. The stamping outfit was furnished by the Grading Station at cost. All adopted the same system, showing the serial number of the creamery, the date of manufacture, and churning number. Certificates of the grade and quality of the butter are given for each individual churning on request. If the butter is sold on grade, the boxes must have the same mark as the fourteen-pound sample representing the churning.

Scale of Points used in Scoring: Flavour, 45; texture, 15; incorporation of moisture, 10; colour, 10; salt, 10; finish, 10. Total score, 100.

STANDARDS OF GRADES BY POINTS.

| | Special | No. 1 | No. 2 | No. 3 |
|---|---|---|---|---|
| Flavour | 41 | 39 | 37 | under 37 |
| Total of | 94 | 92 | 87 | under 87 |

In 1917, there were twenty-six creameries entered for grading. Nearly all were making butter of a very loose open type of texture, with abundance of free moisture, not the type of butter that the export trade was demanding, or of a type that would compete successfully with our competitors in our own home markets, viz. the "Prairie Provinces" and New Zealand.

Only two or three creameries grading in 1917 pasteurized the cream for butter-making.

In 1917, there was graded 3,299 samples, eighty-two per cent. of which ranked First Grade. Since, there has been a steady increase in the number of creameries, and in the number of samples graded, until now we have 127 creameries on our list, and in 1922 there were graded 12,586 churnings.

Since 1917, the percentage of First Grade butter had declined gradually until in 1922, only sixty-eight per cent. of butter graded scored in First Grade.

The cause of the general deterioration in quality, is the acceptance by creamery men of all grades of cream at a flat rate per pound of fat.

Where cream has been bought on a graded basis, splendid improvement has been noticed. It is, therefore, quite evident that the future reputation of Ontario butter depends largely on the system practised in payment for the raw material.

Jno. H. Scott, *Official Grader.*

# DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO

## OFFICERS FOR 1921.

*President*—Geo. Smythe, Iroquois.
*Vice-President*—M. N. Empey, Napanee.
*Secretary*—T. A. Thompson, Almonte.
*Treasurer*—Jas. R. Anderson, Mountain View.

*Directors.*

| | |
|---|---|
| Carleton | W. G. Godkin, Carsonby. |
| Renfrew | Jno. G. Gibbons, Renfrew. |
| Lanark | Jno. Steele, Almonte. |
| Grenville | J. A. Sanderson, Oxford Station. |
| Russell | W. H. Olmstead, Bearbrook. |
| Prescott | A. Carriere, Curran. |
| Stormont | O. E. Wert, Avonmore. |
| Glengarry | A. J. Robertson, Martintown. |
| Dundas | Geo. Smythe, Iroquois. |
| Leeds | R. G. Leggett, Newboro. |
| Frontenac | E. Campsel, Hartington. |
| Lennox and Addington | M. N. Empey, Napanee. |
| Hastings | F. J. Knight, Belleville. |
| Prince Edward | R. W. Ireland, Wellington. |
| North Hastings | S. S. McComb, Belleville. |
| Northumberland | Rich. Honey, R.R. No. 1, Dartford. |
| Peterboro | G. A. Gillespie, Peterboro. |
| Victoria | W. J. Newman, Lorneville. |

*Auditors*—J. J. Payne, Brinston, and Morden Bird, Stirling.

## FINANCIAL STATEMENT FOR 1920.

| Receipts. | | Expenditures. | |
|---|---|---|---|
| Cash on hand from previous year | $121 34 | Brockville pay sheet for directors | $443 35 |
| To members' fees | 196 90 | Pay sheet No. 2, Toronto | 188 30 |
| Government Grant | 2,500 00 | Prosecutors' salary and expenses | 678 92 |
| Receipts from programme ads | 320 00 | Lecturer's expenses | 411 80 |
| Receipts from dairy exhibit | 7,256 95 | Advertising and Printing | 623 35 |
| Money received from prosecutions | 1,018 30 | Rural Publishing Co., subscriptions to *Farm and Dairy* | 196 70 |
| Donations for special prizes | 25 00 | District meeting expenses | 224 39 |
| Interest from the Molsons Bank | 3 82 | Officers' stationery, stamps, telephone and express | 90 55 |
| Owing to the Molsons Bank | 743 26 | Officers' salaries | 600 00 |
| | | Official stenographer | 90 00 |
| | | Expenses from Dairy Exhibit | 8,638 21 |
| | $12,185 57 | | $12,185 57 |

# DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO 1920

Following is a summarized report of the Forty-fourth Annual Convention of the Dairymen's Association of Eastern Ontario, held in Cobourg, January 6th and 7th, 1921:

The cordiality of the reception given by the officials and business interests of the town was much appreciated by the dairymen, who attended in quite large numbers.

Deep appreciation was shown of the work being done and the advice being given by the agricultural representatives and dairy instructors of the Provincial Department of Agriculture, and it would be well for the dairymen in general, as well as other farmers, to keep in touch with the agricultural representatives as well as the dairy instructors if they wish to derive the greatest benefit from the various services available to all farmers—literature, meetings in the interests of farmers, advice regarding stock improvement, seeds, marketing, etc. A general discussion took place on the provisions of The Dairy Standards Act, and the desire of the gathering was that the Government should provide capable men to do the testing quite independent of the regular employees of the factory.

Considerable discussion took place on the necessity of producers taking greater interest in the manufacture of cheese and butter, and to lend financial support to the work of the Dairymen's Association and the National Dairy Council. The following addresses were made by the speakers indicated:

"The Cost of Milk Production."—A. E. Archibald, Director of Experimental Farms, Ottawa.

"Experimental Work on the Uses of Neutralizers in Cream for Butter Making."—Geo. H. Barr, Chief Dairy Division.

"Quality of Ontario Cheese."—H. W. Coleman.

"Official Grading and Control of Dairy Products for Export."—J. A. Ruddick, Dairy and Cold Storage Commissioner.

"What the Agricultural Representatives are doing for the Dairy Interests."—W. D. Jackson, Parliament Buildings, Toronto.

"Modern Butter Making."—L. A. Zufelt, Eastern Dairy School, Kingston.

"The Work and Financing of The National Dairy Council."—D'Arcy Scott.

Since practically all the information imparted has appeared in literature published by the Departments to which the speakers named are attached, articles are not printed herewith, those interested being requested to write direct to the Provincial and Dominion Departments of Agriculture for information on the lines indicated by the topics given.

The President, Mr. Geo. Smythe, expressed regret that on account of lack of funds it was impossible to hold an Exhibition in connection with the Convention.

"This has been the first season of free trading in cheese since the war, and when the control was removed, prices went skywards for a short while, with a declining market until the present.

"We still have the manufacturing and importation of Oleo in Canada. It was introduced as a war measure and was to cease on the termination of the war. We have also a Dairy Standards Act dormant, so far as cheese is concerned, and increased freight rates. These and various other matters in connection with this business will require your attention.

"We are short in the export of cheese something like 130,000 boxes this season. This condition seems to be chronic, but there were probably more exports in the way of milk, cream, and condensed milk than in former years."

Mr. E. H. STONEHOUSE appealed for greater co-operation on the part of all branches of the industry and for improvement in the quality of the raw material. He stated in part as follows:

"In the broader aspects of the whole dairy industry, if we are to reach higher standards of excellence and successfully compete in the markets of the world, co-operation between the various branches is absolutely essential. If the stream is pure the source must be pure. If dairy products, butter, cheese, condensed milk, etc., are to be of the very highest quality, milk itself must be pure and sanitary. One of the foremost men in the business recently said: 'We have been trying to make good butter and cheese from badly cared for and unsanitary milk, and it cannot be done.' Let us as producers do our part. We look to the distributor to get our product to the consumer in such a condition that he will use more milk; the manufacturer of butter and cheese to make an article of food so nutritious and palatable that their use will be constantly increased, both at home and abroad. Upon their ability to do so depends very largely the price we as producers obtain for our product, and in the co-operation of all branches of the industry working harmoniously together depends the possibility of supplying these essential foods of a quality and at a price well within the purchasing power of all classes of the world's teeming millions."

Honourable MANNING W. DOHERTY, Minister of Agriculture, congratulated the officials of the Association upon the educational features of their convention and expressed appreciation of the service rendered by the instruction staff of the Provincial Department of Agriculture. Mr. Doherty, after outlining the early history of the Province, expressed the opinion that: "As the days and years go by this Province of Ontario will more and more become a dairy province because of the necessity of keeping up the fertility of our farms. In addition to that, with the increased price of land, it becomes more or less necessary, in order to prosper, that farmers shall devote their attention to that branch of farming which offers them the greatest possible turnover per annum, and probably on the ordinary Ontario farm there is no branch of farming which will give the farmers as great a turnover as dairying. With our increasing population in the Dominion and its increasing human demands from year to year, we see the Province of Ontario becoming more and more engaged in dairy farming.

"The immediate problems facing the dairy industry in the Province, to my mind, may be briefly put down as three: first, increased production; second, improved standard grades of quality; third, the finding of suitable, reliable, dependable markets."

Mr. Doherty made a very strong appeal for the improvement of the beef breeds as well as dairy cattle. Mr. Doherty expressed approval of the principles underlying The Dairy Standards Act, and believed that if assurance were given to the producers that the testing would be properly done, the Act would be acceptable.

Mr. G. A. PUTNAM, Director of Dairying, expressed the view that Dairying would continue to be the leading line of agriculture in Eastern Ontario, and advised the dairy farmers to link up their activities in this line with the production of bacon hogs, and poultry, a combination that would present a most dependable and profitable line of agriculture. Mr. Putnam emphasized the

importance of dairying as a money maker, and the products as the most important of our foods. An appeal was made for quality in the raw material, the one essential to success.

### Resolutions.

Mr. M. N. Empey moved, and Mr. Alex. Hume seconded, the resolution asking that "The Dairy Standards Act be put into operation at as early a time as the Minister of Agriculture could possibly arrange to have it done." (Carried.)

After considerable discussion on the grading and marketing of cheese, the following resolution was presented:—

"Resolved, that this meeting is in favour of a system being established by means of which all cheese exported from Canada shall be graded before being exported." (Carried.)

The secretary, Mr. T. A. Thompson, in presenting a summarized statement of the year's activities, appealed to the dairymen to provide better factories and to pay the makers a fair wage. He emphasized the great importance of the industry as a creator of wealth and made an appeal for the development of the home market.

Regret was expressed that the finances of the Association would not allow the holding of a dairy exhibit. The Association held eighteen district dairy meetings throughout Eastern Ontario during the year.

Tribute was paid to the memory of Mr. Wm. Brown, President of the Association, and Mr. Henry Glendinning, a past president, and one of the best known dairymen in the Province, and also Mr. E. G. Henderson, of Windsor, one of our best patrons, to whom the Dairymen of Eastern Ontario owe a debt of gratitude, who were claimed by death during the year. These men had been leaders in the industry and prominent at the Conventions for many years.

An address was given by Mr. D'Arcy Scott, secretary of the National Dairy Council, on the work of that organization. For literature published by the Council and information as to its activities, inquiries should be addressed to the National Dairy Council, Ottawa, Canada.

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## DAIRY INSTRUCTION AND SANITARY INSPECTION.

The following extracts are from the report of Chief Dairy Instructor and Sanitary Inspector, G. G. Publow:

"Notwithstanding the reduction and change in the personnel of the staff of instructors, I feel that the efficiency of the work was well maintained throughout.

"The chief duties of the Instructors are: to visit and inspect the factories as to their sanitary conditions and equipment, to examine into the quality of the cheese, to instruct regarding the manufacture, if found necessary; to examine the milk for its sanitary condition and fitness for cheesemaking and upon request

to test it for adulteration where there is reason to believe that it is being tampered with."

"Visiting the factories at short intervals is a great factor in keeping the cheese of uniform quality and maintaining good sanitary conditions. I am pleased to report a very marked improvement in the sanitary condition of the cheese factories this season; but there are still a few condemned by the Instructors

| Instructors and Group 1920 | No. of factories in group. | No. of full day visits | No. of call visits | No. of patrons | No. of patrons visited | No. of samples of milk tested for adulteration | No. of samples deteriorated | No. of sediment tests made | No. of factories pasteurizing whey | No. of factories making whey butter |
|---|---|---|---|---|---|---|---|---|---|---|
| Almonte— | | | | | | | | | | |
| Freeman Brown | 40 | 64 | 295 | 1,563 | 126 | 1,301 | 3 | 1,010 | 2 | 12 |
| Alexandria— | | | | | | | | | | |
| Fred Wright | 39 | 144 | 94 | 1,140 | 11 | 395 | 8 | 425 | ..... | ..... |
| Brockville West— | | | | | | | | | | |
| S. S. Cheetham | 43 | 56 | 129 | 1,075 | 50 | 1,123 | ..... | 225 | ..... | 22 |
| Brockville North— | | | | | | | | | | |
| Peter Nolan | 43 | 61 | 221 | 1,399 | 28 | 1,291 | 1 | 375 | 1 | 26 |
| Belleville and Prince Edward— | | | | | | | | | | |
| Hugh Howey | 35 | 52 | 202 | 2,205 | 126 | 6,263 | 3 | 860 | ..... | 12 |
| Cornwall— | | | | | | | | | | |
| J. Buro | 43 | 70 | 280 | 1,364 | 25 | 1,212 | 4 | 160 | 5 | 4 |
| Campbellford— | | | | | | | | | | |
| W. R. Linn | 38 | 116 | 112 | 1,606 | 20 | 3,635 | ..... | 1,938 | 1 | 13 |
| Kemptville— | | | | | | | | | | |
| Thos. J. Hicks | 47 | 82 | 250 | 1,613 | 40 | 768 | 4 | 180 | ..... | 8 |
| Kingston— | | | | | | | | | | |
| Fred Clark | 44 | 48 | 174 | 1,330 | 28 | 1,428 | 4 | 340 | 4 | 6 |
| Peterboro— | | | | | | | | | | |
| R. W. Ward | 34 | 78 | 319 | 1,294 | 75 | 495 | 1 | 331 | ..... | 14 |
| Madoc— | | | | | | | | | | |
| C. F. Linn | 41 | 94 | 239 | 1,248 | 35 | 2,176 | 1 | 878 | ..... | 12 |
| Morrisburg— | | | | | | | | | | |
| C. W. Norval | 47 | 117 | 130 | 1,446 | 29 | 1,068 | 7 | 146 | ..... | 40 |
| Perth— | | | | | | | | | | |
| J. H. Echlin | 40 | 41 | 263 | 1,378 | 70 | 450 | 2 | 135 | 2 | 21 |
| Ottawa East— | | | | | | | | | | |
| H. A. McKinley | 49 | 46 | 398 | 1,545 | 3 | 1,400 | ..... | 467 | ..... | 4 |
| Ottawa— | | | | | | | | | | |
| J. A. Mitchell | 43 | 47 | 378 | 1,314 | 27 | 1,137 | ..... | 649 | ..... | 10 |
| Plantagenet— | | | | | | | | | | |
| Jos. McAllister | 36 | 41 | 306 | 1,103 | 27 | 515 | 2 | 405 | ..... | 1 |
| Napanee— | | | | | | | | | | |
| Geo. H. Bensley | 38 | 55 | 214 | 2,476 | 47 | 5,058 | 6 | 209 | ..... | 4 |
| Vankleek Hill— | | | | | | | | | | |
| Gilbert Rancier | 42 | 50 | 212 | 1,150 | 27 | 960 | 3 | 250 | ..... | ..... |
| | 742 | 1,262 | 4,216 | 26,249 | 794 | 30,675 | 49 | 8,983 | 15 | 209 |

and it was found necessary to close two of these until the necessary improvements were made, while others were given a warning.

"Six new factories were built and additional improvements on repairs and equipment were made by 368 plants, to the value of $138,768.00.

"Two hundred and nine factories made whey butter to a total of 621,557 pounds, valued at $323,210.00. This exceeds last year by over $18,000. In

addition, 259 factories skimmed the whey and shipped cream to the value of $309,185.

"210 factory meetings were attended by either myself or the Instructors, and I have found these meetings a very effective means of meeting the patrons and discussing the "Production and Care of Milk," and other subjects with them.

| No. of factories shipping whey cream | No. of factories paying by test | Average % of fat in all tests made | Lbs. of milk delivered from May 1st to Nov. 1st | Lbs. of cheese made from May 1st to Nov. 1st | Average lbs. of milk to make a lb. of cheese | No. of factories with cool curing rooms | No. of factories which made improvements in buildings or plant | Estimated expenditure, including new buildings | No. of new factories built | No. of new silos built | No. of patrons using milking machines |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 4 | 3.4 | 35,093,460 | 3,156,611 | 11.11 | 3 | 18 | $6,255 | 1 | 9 | 32 |
| 16 | 11 | 3.6 | 35,267,058 | 3,221,906 | 10.94 | ..... | 4 | 1,845 | .... | 4 | 38 |
| 12 | 2 | 3.4 | 54,540,709 | 4,770,144 | 11.43 | 1 | 18 | 10,850 | .... | 4 | 80 |
| 1 | ..... | 3.4 | 53,406,371 | 4,747,272 | 11.25 | 1 | 15 | 3,600 | .... | 10 | 80 |
| 23 | ..... | 3.4 | 63,547,872 | 5,602,951 | 11.35 | 14 | 12 | 8,400 | .... | 37 | 62 |
| 24 | 12 | 3.7 | 48,403,130 | 4,461,849 | 10.84 | 3 | 36 | 6,745 | .... | 5 | 73 |
| 23 | ..... | 3.4 | 46,559,129 | 4,103,381 | 11.34 | 5 | 30 | 8,500 | .... | 18 | 45 |
| 21 | 9 | 3.4 | 47,598,170 | 4,209,330 | 11.30 | 2 | 31 | 27,000 | 1 | 8 | 62 |
| 14 | 1 | 3.6 | 39,276,630 | 3,560,891 | 11.03 | ..... | 16 | 8,150 | .... | 5 | 29 |
| 17 | 12 | 3.4 | 23,778,125 | 2,069,058 | 11.49 | 9 | 25 | 5,411 | .... | 34 | 26 |
| 25 | ..... | 3.4 | 45,616,008 | 4,009,769 | 11.36 | 2 | 32 | 5,320 | .... | 7 | 49 |
| 3 | ..... | 3.5 | 58,455,441 | 5,324,131 | 10.98 | ..... | 28 | 4,500 | .... | 2 | 50 |
| 4 | 1 | 3.5 | 32,973,848 | 2,955,050 | 11.15 | 1 | 10 | 3,200 | .... | 15 | 56 |
| 10 | 9 | 3.5 | 54,310,004 | 5,130,993 | 10.58 | ..... | 34 | 11,138 | 1 | 20 | 55 |
| 6 | 22 | 3.4 | 48,210,315 | 4,345,751 | 11.09 | 1 | 12 | 6,030 | 2 | 33 | 132 |
| 6 | 6 | 3.7 | 24,529,222 | 2,437,479 | 10.06 | ..... | 16 | 6,234 | .... | 9 | 5 |
| 21 | ..... | 3.5 | 68,161,696 | 6,201,815 | 11.0 | 3 | 13 | 6,900 | .... | 8 | 85 |
| 20 | 2 | 3.6 | 37,792,800 | 3,592,471 | 10.52 | ..... | 18 | 8,690 | 1 | 2 | 70 |
| 259 | 91 | 3.5 | 817,519,988 | 73,900,852 | 11.06 | 45 | 368 | 138,768 | 6 | 230 | 1,029 |

## Northern Ontario Report.

"In addition to the 742 cheese factories in operation in Eastern Ontario, 22 were in operation in Northern Ontario (known as the Sudbury district), as compared with 24 last year. One new factory was built and three were converted into creameries, making a total of 6 creameries in operation in that

district last season, which indicates that butter-making had gained in popularity. There has been marked improvement in the cheese factories as well. The following statistics are from Mr. McAllister's report:—

| | |
|---|---|
| No. of cheese factories in operation | 22 |
| No. of patrons | 416 |
| No. of cows from which milk for cheesemaking was obtained | 3,050 |
| No. of lbs. of milk delivered from May 1st to November 1st | 6,417,722 lbs. |
| No. of lbs. of cheese manufactured from same | 634,279 lbs. |
| No. of lbs. of milk per lb. of cheese | 10.11 lbs. |

3 factories pay by test.

"One new factory was built and 12 made improvements; the estimated expenditure, including new buildings, was $4,184.

"553 patrons supplied cream to the creameries and 386,233 pounds of butter was manufactured from same.

"The necessity of securing a larger number of well qualified cheese-makers is important. For some reason or other good bright men are passing up cheese-making for other trades and very few are entering as apprentices, so that it is no wonder we are facing an ever increasing shortage of capable factory managers. It is really the producers of milk who should be and are most concerned and affected by such matters as this, for the cheese made belong to them and the market value will be governed very largely by the quality of the cheese as it reaches the consumer, who is after all the person who must be satisfied."

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## CREAMERY INSTRUCTION IN EASTERN ONTARIO.

L. A. Zufelt reported regarding creamery instruction in Eastern Ontario:—

I beg to hand in my annual report as Creamery Instructor for Eastern Ontario.

| | |
|---|---|
| No. of creameries in district | 47 |
| No. having pasteurizers | 32 |
| Estimated butter for the year 1920 | 7,250,000 lbs. |
| Estimated value of same | $4,200,000 |
| No. of call visits made during season | 65 |
| No. of full days spent at creameries | 13 |

The instruction work this season was conducted on somewhat different lines than formerly, and instead of trying to visit every creamery as often as possible, I visited only those that were anxious for improvement and were prepared to follow out the instruction given. This method gave very general satisfaction and I was able to concentrate my efforts among these creameries and thus make a decided improvement in the quality of a few rather than a doubtful improvement of the many.

# DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO

## OFFICERS FOR 1921.

*President*—J. Scott, Woodstock.
*First Vice-President*—J. N. Allen, Dunnville.
*Second Vice-President*—R. Johnston, Bright.
*Third Vice-President*—H. Mannell, Woodstock.
*Secretary-Treasurer*—Frank Herns, Bank of Toronto Chambers, London.

*Directors.*

T. Ballantyne, Stratford.
Frank Thompson, Bennington.
G. M. Cary, Petrolia.
Jas. Newbigging, Atwood.
Garnet Bain, Lakeside.
Fred Keyes, Elmira.

*Representatives.*

*Western Fair, London*—F. Herns, London, and C. J. Donnelly, London.
*Canadian National Exhibition, Toronto*—F. Herns, London.

*Auditors*—J. A. Nelles, London; J. C. Hegler, Ingersoll.

## FINANCIAL STATEMENT FOR 1920.

### Receipts.

| | |
|---|---|
| Cash on hand from previous year | $85 78 |
| Members' fees | 276 00 |
| Legislative grant | 2,000 00 |
| Money received from prosecutions | 371 00 |
| Money received for special prizes | 50 00 |
| Sale of dairy exhibits | 2,891 07 |
| Advertising in convention programme | 258 00 |
| | $5,931 85 |

### Expenditures

| | |
|---|---|
| Cash paid for prizes | $526 00 |
| Expenses for convention | 152 50 |
| Stenographer's salary | 571 50 |
| Directors' expenses | 149 50 |
| Postage and stationery, $104.16; Advertising, $111.28 | 215 44 |
| Printing | 283 36 |
| Judges' fees and expenses | 58 70 |
| Prosecutors' salary and travelling expenses | 185 50 |
| Periodicals for members | 197 40 |
| Cost of reporting | 60 00 |
| Purchase of dairy exhibits | 2,888 35 |
| Office expenses, light, cleaning, and sundries | 111 24 |
| Office rent | 171 00 |
| Telegrams and telephone, $78.87; Express and cold storage, $30.28 | 109 15 |
| Half fines paid to factories | 185 50 |
| Auditors' fees and expenses | 15 00 |
| Interest on bank deposits | 3 75 |
| Miscellaneous | 2 60 |
| Total | $5,861 49 |
| Balance | 70 36 |
| | $5,931 85 |

# DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO 1920

Following is a summarized report of the Fifty-fourth Annual Convention of the Dairymen's Association of Western Ontario, held in the Masonic Hall, London, on Wednesday and Thursday, January 12th and 13th, 1921.

Co-operation of the chief officials of the city and representatives of the Chamber of Commerce added materially to the success of the Convention. Alderman G. A. Wenige, on behalf of Mayor Little, extended greetings from the City, while Mr. Gerald Pearson represented the Chamber of Commerce.

Considerable discussion took place on the necessity of producers taking a greater interest in the manufacture of cheese and butter and lending financial support to the work of the Dairymen's Association and the National Dairy Council. The following addresses were made by the speakers indicated:

"The Economic Feeding of Dairy Cattle," E. S. Archibald, Director Experimental Farms, Ottawa.
"Cow Testing," A. H. White, Dairy Division, Ottawa.
"The Milk Situation in Ontario," J. A. Ruddick, Dairy Commissioner, Ottawa.
"The Value and Need of Dairy Research Work," Prof. H. H. Dean, O.A.C., Guelph.

## Extracts from Directors' Reports.

"Cheese prices were excellent until about September when, owing to adverse exchange rates and the general trend of lowering prices a decline in prices took place, but the general condition is sound, and the future of the basic branch of the dairy industry looks good.

"Butter prices were high during the early part of the season, but began to decline somewhat when the exportable outlet was curtailed through the disturbing factor of exchange rates and the continued control of imports in England. Indications, however, point to a future export trade in Canadian butter, and warn us to exercise every precaution to manufacture a high grade standardized product which will be equally acceptable in the home market.

"Studying the situation as it develops from year to year, the demand for one type of dairy product creates an advance in price until the demand is met with a corresponding rise in price from some other dairy product, the output of which was decreased. In the last analysis the summer prices for dairy products in Canada is for many years to come likely to be controlled to a certain extent at least by the price of our exportable surplus, although at certain seasons of the year local demand affects the situation.

"The exhibit of dairy products in the refrigerated space provided in the dairy building at the Toronto Fair was for the second time placed by the Provincial Dairy Branch and was very favourably commented upon, and was, we believe, the means of bringing more fully to the attention of consumers the importance of dairy product as a food.

"Last year your Directors respectfully recommended to the Provincial Dairy Branch that in addition to the work mentioned, means of inspection and instruction for the cream buying stations should be provided. This recommendation was followed and we believe resulted in greatly improving conditions at these places, especially in testing methods, sanitary arrangements, etc.

"The Provincial Legislature passed an Act at the last session dealing with the testing of milk and cream. The Act, known as 'The Milk and Cream Purchase Act,' should be the means, if judiciously administered, of bringing

about more uniform and careful methods in the testing of milk and cream and eventually establish complete confidence in the test. Careful regulations were drawn, two inspectors for Western Ontario appointed who devoted all their time to the checking up of tests. Your hearty co-operation in connection with the administration of this Act is solicited and we believe it is good dairy legislation."

In the dairy exhibit, Mr. C. J. Donnelly, of London, won the silver cup given by the Imperial Bank of Canada, while Mr. T. J. Newman, of Lorneville, won the silver shield donated by the Toronto Produce Exchange.

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## DAIRY INSPECTION.

Following are extracts from the report of Chief Dairy Inspector and Sanitary Inspector for Western Ontario, 1920, Mr. F. Herns, London:

The four cheese instructors, in addition to giving instruction in cheese-making, inspecting the milk, the cans, carrying on cow testing, checking milk tests, making sediment tests, looking after the pure cultures, making standard alkaline solution, curd tests, visiting the patrons in connection with defective milk; endeavouring to keep the equipment and general sanitary conditions of the factories satisfactory and the quality of cheese up to standard, included in their work regular visits to the milk and cream stations, powder milk plants, etc., giving every possible assistance in improving the general milk supply.

The three creamery instructors gave instructions in the best methods of buttermaking and general creamery practice; made tests for salt and moisture, endeavouring to bring about greater uniformity in this connection, assisting to remedy any insanitary conditions and generally securing a more uniform type of butter manufactured by the creameries through pasteurization and other up-to-date methods.

The grading station of which Mr. Jno. H. Scott had charge was operated along similar lines to last year, except that no referee work was done at the warehouses on ungraded butter, but the grading was confined entirely to the butter passing through the grading station.

With the many complicated problems arising in dairy products manufactured in Western Ontario and with the raw material passing into so many different channels and with the ever increasing competition for the raw material which makes it difficult for receivers to reject deliveries from which high-class dairy products cannot be made, it becomes every year a more difficult problem to deal with the situation and meet the many technical requirements in keeping up the general standard of quality of our dairy products, especially cheese and butter, and to stimulate the co-operative spirit among the various competitive branches of the industry.

Many factors enter into the general field of progress and the ebb and flow of demand, seasonal and otherwise, is bound at times to be carried too far in one direction, that is to say, over-production of one type of dairy products at the expense of some other.

In August two inspectors were appointed to check up milk and cream tests in accordance with The Milk and Cream Purchase Act, and it is gratifying to know that the majority of the responsible factories are conducting their fat tests carefully and correctly. The careless or ignorant tester, however, requires special attention. The Act should eventually insure uniform methods

of testing milk and cream throughout the Province and bring about confidence in the operation of the Babcock test.

The dairy circulars on "Care of Milk," "Care of Cream," "Milk and Cream Testing," "Cow Testing," "Ice Supply," etc., were all revised and copies furnished the factory men and many of the cream buying stations for distribution, directly from the Dairy Branch, Toronto.

Quality of Cheese.—The past season did not develop any long period of extremely warm weather, therefore it was less difficult than in some former years to maintain the standard of quality. Some factories developed the usual difficulties, which were dealt with as quickly as possible, so that no large amount of defective cheese was produced. The fall make was increased somewhat by a few of the shipping stations turning over to cheesemaking when the outlet to some of the powdered milk plants was curtailed shortly after the middle of September.

There were a few comparatively inexperienced men engaged in some of the factories last season, but it is expected that these will be replaced by more successful factory managers. A number of younger makers are taking charge of some of the factories for next season and they may require considerable assistance to make sure that no losses are suffered by the producers. It is expected that the labour situation will also be relieved and that more normal conditions in connection with the cost of manufacturing may prevail, thus encouraging every one engaged in the cheese business.

Whey Butter.—Of the factories skimming the whey, only nineteen made whey butter at the factory, the balance shipping the whey cream. Again it is pointed out that it is very important that a rich whey cream should be skimmed, cooled immediately after separating to a low temperature and shipped in a sweet condition. The whey cream or whey butter should be handled under such conditions that the market may be maintained under normal conditions for this type of product. All utensils and piping must be kept strictly sanitary. Heating the whey to 155 degrees is always necessary, whether or not skimming is practised, if yeasts and other objectionable flavours which may be transmitted through the whey are to be kept in check, and also as a precautionary measure against the transmission of disease germs to livestock. Paying a premium for first grade whey cream will encourage extra care in production and it is in the interests of milk producers as well as factory managers to establish a market for first grade whey cream.

Milk Cans.—Rusty, insanitary cans are less in evidence now than formerly. The general standard of sanitation in all dairy operations is being gradually raised and all successful factory operators are building up a reputation on this basis as well as upon the quality of the goods manufactured.

Quality of Butter.—The ice supply was abundant and every creamery had a sufficient amount for cooling purposes for the season. Climatic conditions were such that a better quality of cream was secured, less yeasty, sour cream received. The quantity of first grade butter increased and most of the creamery men put forth every effort to improve the quality of the butter with marked success. I wish to express appreciation of the response of the creamery men in this connection and to thank the produce dealers for their efforts to pay a premium for first grade butter.

Cream Buying Stations.—For the first time an instructor was engaged to visit cream buying stations and other buying places and 247 of these buying stations were inspected and the operator given special instructions in cream testing, cream improvement, sanitary arrangements, etc. The majority were

visited several times. Every effort was made to improve the methods of testing the cream, handling cream, the sanitary conditions, equipment, etc. Many of these buying stations are country stores and have no facilities for handling cream. It was found that many operators were not following authentic methods in cream testing and most of the work was concentrated on this point, that is to say, to see that all were complying with The Cream Purchase Act by having properly adjusted scales, weighing the samples properly, taking the samples correctly, reading the tests accurately, using a thermometer and also hot water containers for the test bottles in order that fat readings might be read at a uniform temperature of 140 degrees F. Excellent results have been accomplished and by a systematic "follow up" it ought to result in more accurate cream testing and also make reasonably sure that every operator who tests cream commercially is competent. With the intense competition for cream and so many different plans of purchasing and handling cream it seems a difficult matter to suggest a uniform method for grading and paying for cream by grade in so far as these buying stations are concerned. It looks as though these cream receiving station operators will have to be educated to grade cream. It cannot, however, be too strongly urged upon every one engaged in the industry the absolute necessity for a concerted effort towards further quality improvement, and this applies equally to our home market and to the export trade.

Molds in Butter.—During the past season a number of creameries have had mold trouble, especially with print butter. The general opinion seems to be that the chief cause is insufficient treatment of the wrappers to kill the mold spores and it is recommended that the wrappers be treated with a saturated solution of hot salt brine, making certain that the entire surface of the wrapper receives treatment. To accomplish this it is suggested that a watertight box in which a steam pipe can be introduced be utilized and kept filled with the saturated salt solution in which to soak the wrappers. Care must be taken that this salt solution is strong enough to have a precipitate of salt in the bottom of the tank. In this solution the wrappers are spread out and held long enough in the hot salt solution to kill the mold spores.

Standardization.—It has been possible to standardize the type of cheese produced in the Province through uniform methods adopted by the cheese makers. Uniform methods of instruction has been one of the chief factors in accomplishing these results, together with the ideal type of cheese recommended for export trade being continually kept before every person interested in the cheese industry. Standardization, however, could not have been brought about had the cheese manufacturers failed to take advantage of the technical information offered and to follow continuously the methods known to produce the best type of cheese from the Canadian standpoint. In addition to uniform methods adopted at the factories, a better quality of milk has gradually been supplied to the factories each succeeding year, although sudden changes to warm weather any time during the season still find a considerable amount of over ripe and gassy milk arriving at the factories. Uniform buttermaking methods is just as necessary to be followed at the creameries if we are to standardize and produce a uniform type of butter, but this cannot result unless the buttermakers actually put into practice modern methods which will enable them to make a uniform type of butter. The market is increasing for a mild salted, close textured, long keeping butter, and this can be made only by improving the quality of the cream and giving this cream the very best treatment known, such as pasteurization, etc., after it arrives at the factory.

# DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO

## OFFICERS FOR 1922.

*President*—M. N. Empey, Napanee.
*First Vice-President*—W. J. Newman, Lorneville.
*Second Vice-President*—W. H. Olmstead, Leonard.
*Treasurer*—J. R. Anderson, Mountain View.
*Secretary*—T. A. Thompson, Almonte.

*Directors.*

1. Carleton.....W. D. Godkin, Carsonby.
2. Dundas.....Alex. McGruer, Brinstons Corners.
3. Frontenac.....Ed. Campsell, Hartington.
4. Glengarry.....A. J. Robertson, Martintown.
5. Grenville.....Jas. Sanderson, Oxford Station.
6. Hastings South.....F. Knight, Belleville.
7. Hastings North.....Jas. Haggarty, West Huntingdon.
8. Lanark.....John Steel, Almonte.
9. Leeds.....R. G. Leggett, Newboro.
10. Lennox and Addington.....M. N. Empey, Napanee.
11. Northumberland.....Richard Honey, Dartford.
12. Peterboro.....G. A. Gillespie, Peterboro.
13. Prince Edward.....A. M. Platt, Picton.
14. Prescott.....Neil Fraser, Vankleek Hill.
15. Renfrew.....J. G. Gibbons, Renfrew.
16. Russell.....W. H. Olmstead, Bearbrook.
17. Stormont.....W. O. Wert, Avonmore.
18. Victoria.....W. J. Newman, Lorneville.

## FINANCIAL STATEMENT FOR 1921.

| Receipts. | | Expenditures. | |
|---|---|---|---|
| Members' fees | $107 00 | Overdraft at Molsons Bank, $743.26; War tax, 55c | $743 81 |
| Legislative grant | 2,500 00 | Cobourg pay sheets for directors | 517 75 |
| Receipts from programme advts. | 192 15 | Toronto pay sheet No. 2 | 205 30 |
| Money received from prosecutions | 957 50 | Prosecutors' salary and expenses | 689 99 |
| Premium on American money | 2 80 | Lecturers' expenses | 375 57 |
| Interest at Molsons Bank | 6 69 | Advertising and printing | 496 29 |
| | $3,766 14 | Rural Publishing Co., subscriptions to *Farm and Dairy* | 83 60 |
| Balance, payment over receipts | 455 56 | District meeting expenses | 337 75 |
| | $4,221 70 | Stationery and telephone | 66 74 |
| | | Officers' salaries | 600 00 |
| | | Official stenographer | 90 00 |
| | | Interest at Molsons' Bank | 14 90 |
| | | | $4,221 70 |

# DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO 1921

Following is a summarized report of the Forty-fifth Meeting of The Eastern Ontario Dairymen's Association, held at the Chateau Laurier, Ottawa, January 5th, 1922:

Mr. Geo. Smythe, of Iroquois, the president, occupied the chair and stated that The Dairy Standards Act, grading, and marketing of dairy products would receive consideration. A full discussion of the provisions of The Dairy Standards Act and the administration of the same was taken part in by representatives of the Dairy Branch of the Provincial Department of Agriculture, producers, and manufacturers. While there was a strong objection to the introduction of the Act on the part of a few, the majority were in favour of the Act.

The evening session opened with words of greeting from Mayor F. H. Plant.

Hon. Manning Doherty expressed the view that $100,000,000 dairy output of Ontario could be easily increased to $200,000,000, and stated that Ontario would become more and more a dairy province. Reference was made to the keen competition which Canada is facing in the markets of Great Britain, an appeal to the dairymen to produce quality and provide an efficient marketing organization and facilities. An outline of the co-operative marketing methods used in disposing of fruit was presented as an inducement for the dairymen to take similar action.

"It is my firm conviction that agriculture is going to be the salvation of this country, and that co-operation is going to be the salvation of agriculture. The Government can do its utmost, but progress will be slow. The Government has spent hundreds of thousands of dollars in this Province and they have engaged men of brain and energy during the last twenty years in many lines, and yet the progress has been very slow and will be slow until such time as we have the industries organized so that the men engaged in agriculture themselves will control their own industry and put into practice regulations that will be for the best interest of the industry.

"The reputation of our butter and cheese matters less to every man in the whole business than it does to the man who is milking the cows, and the man who is milking the cows has got to support actively any policy which has for its object the paying for our products upon the basis of quality, right from the raw product of milk to the finished product of butter and cheese."

"The Dairy Standards Act is a necessary provision if we are to successfully compete with our active competitors. No man can argue against the principle underlying this Act. We have the intelligence and initiative in this country, and we are not going to fall down. If we are to compete successfully we have got to adopt up-to-date methods and we will have to pay for our milk on the quality basis and we will have to insist upon our cheese and butter being sold on the market upon the quality basis.

"A herd of cattle are advertised because of their large production of butter fat, and we pay big prices for these cattle, and we ask our dairymen to go out and buy these high producing cows and bulls coming from high producing females, and then we turn around and say that milk is milk, and that all milk is worth the same price per 100 pounds, and the result is that we have been standing still and to-day it takes one pound of milk more to make a pound of cheese than it did twenty years ago."

Mr. E. H. Stonehouse, president of the National Dairy Council, outlined the great necessity for thorough organization of our dairy interests.

Mr. T. A. Thompson, secretary, presented a report summarizing the season's operations.

### Resolutions.

The following resolutions were passed:

(1) Asking that the admission and manufacture of oleo be discontinued.

(2) Approving of The Dairy Standards Act.

(3) That all creameries value butter fat as shown by the grade.

(4) That both the Federal and Provincial Governments be asked to further grade our butter and cheese, especially for export.

The convention protested against the proposed regulation requiring that all boxes of cheese be bound twice with wire before being exported.

Addresses were given by officials of the Dominion Department of Agriculture as indicated below:—

"Dominion Educational Butter Scoring Contest," J. A. Ruddick, Dairy Commissioner; G. H. Barr, Dairy Division.
"Cheese Grading at Montreal," Jos. Burgess, Chief Dairy Produce Grader.
"The Food Value of Dairy Products," Miss Helen Campbell, Dairy Division, Ottawa.
Papers were given by W. H. Sproule, O.A.C., Guelph, on "Quality of Butter as affected by Methods of Manufacture," and T. H. Lund, O.A.C., on "The Butter Maker's Interest in Micro-organisms."

Since practically all the information contained in the above papers has appeared in literature published by the Departments to which the speakers named are attached, articles are not printed herewith, those interested being requested to write direct to the Provincial and Dominion Departments of Agriculture for information on the lines covered in these addresses.

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## GRADING IN DAIRYING.

### The Hon. W. R. Motherwell, Minister of Agriculture for Canada.

Agriculture, like so many occupations, is going through a testing time, not only here but probably throughout the entire world, and I am quite within the mark when I say that no branch of agriculture is standing up to that test better than the historic old dairy cow. You know many of us westerners left this land of the east many years ago to get away from the dairy cow, but it still stayed with us, because we found in times of stress we had to rely upon it.

The speaker outlined the development of the grading of butter in the Western Provinces and continued:

We wondered how any person could recommend any other system. I find, however, that there is a real difference of opinion. You have so many ramifications of your dairy enterprise; so many products of the dairy; so many interests involved, that any change touches so many people that there is bound to be somebody who will object, and it is very seldom that you can bring about any reform in the dairy business, or any other business, without an objection from somebody. They will say their interest is in danger, but probably their interest is not as much in danger as they think it is. However, it is gratifying to know that we are making progress in that direction. Not only here but all over Canada dairy products and other farm products are being sold according

to their quality. The time has come when we must give some heed to the question of grading because we have to compete with other countries for the markets of the world, and they are just as well qualified to make good butter as we are.

After referring to the fact that Australia, New Zealand and other countries are grading, the Hon. Mr. Motherwell continued:

It is not a question any longer of wondering whether it is optional or not, but it seems to me the time is hastening upon us, in view of the large quantity of dairy products, and the high prices that are obtained for the best of them, if we are to hold the markets of the world and hold the reputation for quality, then we have got to adopt such methods as will bring about the best results, and I cannot conceive of any other method that will secure the very best quality than by paying on the basis of quality. What is the inspiration to excel unless you are paid for excellency of quality.

I know how difficult it is to make changes. We have to respect established institutions, but we have come to the time when we must take these things to heart, and if we want to remain in the market we must adopt every conceivable means to get quality. There is nothing more potent towards that end than the grading system.

The speaker then emphasized the importance of the pure-bred sire in the improvement of stock and the necessity of furnishing a continuous flow of high-class goods in order to obtain and hold markets.

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## DAIRY INSTRUCTION AND SANITARY INSPECTION, 1921.

The following are extracts from the report of G. G. Publow:

This has been what I consider to have been probably the most difficult season for manufacturing cheese since my connection with the dairy industry.

We had an exceptionally long period of hot weather with high temperature prevailing both day and night. We had great shortage of rainfall with the resulting chain of consequences, such as shortage of grass and other feeds, shortage of water in wells, necessitating in many instances the driving of cows long distances twice a day to water. There was also the effect of water shortage in the lack of facilities for cooling the milk. In many cases there was a shortage of water at the factories, and uncleanliness of utensils and equipment was naturally to be expected.

The extreme temperature, coupled with the lessened degree of sanitary precaution, stimulated the growth of undesirable bacteria and yeasts, the latter being, I believe, more destructive to the cheese quality than at any previous time.

All these conditions we did our best to compete with, but unfortunately the great majority of milk producers had not heeded our advice of many previous years to make provision to combat these natural enemies, and as a result we had simply to make the best of what we had.

For a number of years it has been taking more and more milk to make each pound of cheese, and this year it required more than ever, 11.27 pounds.

Many of us can easily remember not so many years ago when most factories were able to secure easily ten pounds of cheese from a hundred pounds of average milk. Each year for a good many seasons the yield has been getting smaller, until this year it is considerably less than 9 pounds.

I wonder how many of our factorymen or patrons ever stop to consider what this means from a money standpoint. Just to give you an idea of what

the difference in yield, pound for pound of milk, between 1920 and 1921 amounts to, let me tell you that, placing the average value of cheese at 18 cents per pound, the difference amounts to $343,186.

Our Babcock tests for fat in the milk show that the average richness is practically the same as during 1920, so that the lessened yield of cheese is

| Instructor and Group 1921 | No. of factories in group | No. of full day visits | No. of call visits | No. of patrons | No. of patrons visited | No. of samples of milk tested | No. of samples of milk deteriorated | No. of sediment tests made | No. of factories pasteurizing whey | No. of factories making whey butter |
|---|---|---|---|---|---|---|---|---|---|---|
| Almonte— Freeman Brown | 36 | 75 | 457 | 1,600 | 221 | 1,258 | 3 | 425 | 2 | 10 |
| Alexandria— Fred Wright | 40 | 78 | 193 | 1,278 | 93 | 842 | 3 | 442 | 2 | ..... |
| Brockville West— S. S. Cheetham | 49 | 56 | 196 | 1,235 | 50 | 1,140 | 2 | 150 | ..... | 21 |
| Brockville North— Peter Nolan | 44 | 52 | 207 | 1,395 | 28 | 1,198 | 4 | 126 | 1 | 27 |
| Belleville and Picton— Hugh Howey | 36 | 48 | 262 | 2,478 | 142 | 3,200 | 4 | 230 | 2 | 10 |
| Cornwall— J. Buro | 43 | 74 | 283 | 1,422 | 125 | 1,059 | 5 | 175 | 5 | 3 |
| Campbellford— J. A. Murray | 37 | 80 | 231 | 1,620 | 105 | 2,195 | 6 | 107 | 1 | 11 |
| Kemptville— T. J. Hicks | 45 | 71 | 343 | 1,569 | 44 | 2,382 | 4 | 200 | ..... | 7 |
| Kingston— Fred Clark | 41 | 56 | 192 | 1,355 | 24 | 1,438 | 6 | 420 | 5 | 6 |
| Peterboro— R. W. Ward | 35 | 59 | 405 | 1,348 | 140 | 1,751 | 5 | 40 | ..... | 14 |
| Madoc and Stirling— C. F. Linn | 41 | 88 | 244 | 1,316 | 121 | 1,451 | 7 | 300 | ..... | 13 |
| Morrisburg— C. W. Norval | 47 | 107 | 97 | 1,452 | 26 | 1,220 | 2 | 420 | ..... | 38 |
| Lanark— J. H. Echlin | 38 | 46 | 286 | 1,320 | 285 | 600 | ..... | 160 | 2 | 20 |
| Ottawa East— H. A. McKinley | 48 | 55 | 433 | 1,518 | 72 | 1,914 | ..... | 654 | ..... | 6 |
| Ottawa— J. A. Mitchell | 49 | 50 | 353 | 1,575 | 37 | 2,932 | ..... | 235 | ..... | 12 |
| Plantagenet— Jas. McAllister | 27 | 28 | 287 | 793 | 23 | 673 | 3 | 190 | ..... | 1 |
| Napanee— G. H. Bensley | 33 | 71 | 200 | 2,196 | 158 | 4,320 | 3 | 180 | ..... | 4 |
| Vankleek Hill— Gilbert Rancier | 44 | 69 | 427 | 1,197 | 18 | 1,259 | 1 | 96 | ..... | ..... |
| | 733 | 1,163 | 5,096 | 26,667 | 1,712 | 30,832 | 58 | 4,550 | 20 | 203 |

undoubtedly due almost entirely to the inferior quality of the milk supply due to other causes, and the greatest of these other causes is the lack of care the milk receives after it is produced and before it reaches the factory.

For many years all the educational forces of our Governments have been endeavouring to impress upon dairymen the value they would derive from better methods of caring for the milk supply, but it seems that very little improvement has been made along this line. I have been particularly impressed with this fact this year, and at many of the meetings which I have attended I have asked for a showing of hands of those who had actually suitable equipment

for caring for their milk supply, only to find a scattered few in the audience. How much longer our dairymen will fail to heed our advice in this matter I do not know, but let me say that failure to properly cool the milk and keep it cool till it reaches the cheese factory is costing them over one million dollars a year.

| No. of factories shipping whey cream | No. of factories paying by test | Average % of fat in all tests made | Lbs. of milk delivered from May 1st to Nov. 1st | Lbs. of cheese made from May 1st to Nov. 1st | Average lbs. of milk to make lb. of cheese | No. of factories with cool curing rooms | No. of factories which made improvements in building or plant | Estimated expenditure, including new buildings | No. of new factories built | No. of new silos built | No. of patrons using milking machines |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 5 | 3.4 | 39,626,562 | 3,516,659 | 11.26 | 4 | 17 | $5,575 | .... | 11 | 35 |
| 7 | 14 | 3.6 | 39,634,980 | 3,719,736 | 10.65 | ..... | 19 | 4,143 | .... | 10 | 33 |
| 14 | 2 | 3.4 | 59,222,856 | 5,098,317 | 11.59 | 2 | 42 | 18,650 | 2 | 3 | 150 |
| 1 | ..... | 3.4 | 54,851,184 | 4,766,184 | 11.50 | 1 | 10 | 4,210 | .... | 11 | 85 |
| 23 | ..... | 3.3 | 65,909,992 | 5,554,246 | 11.68 | 15 | 9 | 5,100 | .... | 9 | 76 |
| 24 | 17 | 3.6 | 54,152,330 | 4,896,387 | 11.05 | 3 | 12 | 4,500 | .... | 25 | 93 |
| 23 | ..... | 3.3 | 49,865,313 | 4,300,196 | 11.49 | 4 | 27 | 8,461 | 1 | 14 | 51 |
| 22 | 11 | 3.4 | 50,334,994 | 4,324,312 | 11.64 | 2 | 28 | 5,530 | .... | 8 | 98 |
| 13 | 1 | 3.5 | 39,325,000 | 3,452,590 | 11.39 | ..... | 7 | 4,080 | 1 | 6 | 29 |
| 15 | 11 | 3.3 | 27,344,374 | 2,393,245 | 11.42 | 11 | 29 | 3,965 | .... | 17 | 38 |
| 23 | ..... | 3.3 | 46,655,745 | 4,323,751 | 11.48 | 2 | 2 | 1,000 | .... | 16 | 46 |
| 5 | 2 | 3.4 | 60,103,700 | 5,463,972 | 11.11 | ..... | 26 | 10,000 | 2 | 24 | 84 |
| 1 | 2 | 3.4 | 37,601,083 | 3,273,064 | 11.15 | ..... | 11 | 8,865 | 1 | 27 | 50 |
| 13 | 6 | 3.6 | 59,373,734 | 5,522,260 | 10.70 | ..... | 15 | 8,975 | 1 | 39 | 97 |
| 10 | 25 | 3.4 | 63,132,504 | 5,635,651 | 11.18 | ..... | 14 | 10,300 | .... | 35 | 200 |
| 3 | 7 | 3.7 | 19,069,107 | 1,815,037 | 10.51 | ..... | 12 | 1,718 | .... | 5 | 3 |
| 21 | ..... | 3.5 | 69,547,673 | 5,443,704 | 11.13 | 2 | 12 | 6,782 | .... | 17 | 92 |
| 9 | 2 | 3.6 | 40,043,194 | 3,666,900 | 10.89 | ..... | 19 | 5,800 | .... | 2 | 70 |
| 244 | 105 | ..... | 869,795,325 | 77,165,711 | ..... | 42 | 311 | $117,654 | 8 | 274 | 1,330 |

In addition to loss in yield, we have the losses due to inferior quality of the cheese, and I want to make this also a subject of special discussion.

During the past season we have had more inferior cheese than for a good many seasons. As a cause of this we may blame the weather with all its chain of consequences, but why should we be at the mercy of the weather when we know how to prevent such defects at comparatively small individual cost.

But tremendous as this loss may seem, I do not wish to leave the impression that the milk producers are to blame entirely for all of the cheese defects. They are not.

During the past season the greatest single defect in our cheese was, I think, due to what is known as the bitter yeast, an organism which has been giving us more or less trouble for a number of years, but which reached much greater proportions in 1921.

I might say for your information that the effect of this yeast organism, as the cheesemaker encounters it, is to influence the process of cheese manufacture to such an extent that it is rather difficult to firm the curd while it is in the whey unless considerably higher temperatures are used, and if the curd is not properly firmed, as the process goes on there is a tendency for the curd to soften or partially liquefy, with heavy losses in the yield of cheese.

If you were to ask me the cause of this, our greatest cheese defect, I would say whey tanks, which naturally includes all the apparatus with which the whey comes in contact.

During the past season I had occasion to respond to a good many special requests from factorymen to personally go to their assistance when they were having trouble of this nature, and while the conditions I have found may have varied in degree the general source of trouble was the same.

In trying to locate such defects, I might say that our usual routine is about as follows: A sample of milk from each patron is taken in a glass jar and fermentation tests made. By doing this we can tell if the milk from one or more farms is responsible. In some factories where the cheese were defective, I have found the milk of every patron seeded with "yeast."

After investigating the milk supply we then look over the factory equipment and surroundings, and to avoid too much detail in explanation, let me say that what we invariably find is this: The iron pipes which conduct the whey to or from separators or to whey tanks are usually heavily coated on the inside with a deposit after one or more years' service, and this deposit acts as a seeding place for all whey, which in turn is carried back to each individual patron, only to re-infect the milk that will come to the factory on the following day; and so the cycle of seeding goes on from day to day, being naturally worse in hot weather.

We have been able to remedy this condition by thoroughly cleaning all pipes and equipment, usually having to burn out the pipes, and by pasteurizing the whey.

### Report of Cheese Factories and Creameries in Northern Ontario.

*Cheese Factories.*

| | |
|---|---|
| No. of cheese factories | 22 |
| No. of patrons | 423 |
| No. of cows from which milk for cheesemaking was obtained | 3,023 |
| No. of lbs. milk delivered from May 1st to November 1st | 6,379,488 |
| No. lbs. of cheese made from May 1st to November 1st | 612,106 |
| Average lbs. of milk per cow for six months | 2,110.31 |
| No. of samples of milk tested | 39 |
| No. of samples adulterated | 1 |
| No. of sediment tests made | 39 |
| Names of factories that pay by test: St. Charles, Maple Leaf, Farmers' Hope, Solar, C.P. 165, Bonfield, all on straight method. | |
| Average lbs. of milk to make lb. of cheese | 10.43 |
| Name of new factory built: Farmers' Hope. | |
| No. of factories that made improvement | 1 |
| Estimated expenditure including new building | $2,500 00 |

*Creameries.*

| | |
|---|---|
| No. of creameries | 7 |
| No. receiving cream in individual cans | 7 |
| No. of patrons shipping cream | 486 |
| No. of lbs. of butter manufactured | 363,983 |

| | |
|---|---|
| Value of same | $128,480 |
| No. of new creameries in operation | 1 |
| No. of creameries that made improvement, 1; expenditure | $535 |

Realizing as I do how much less market there is now than formerly for undergrade cheese, and how much financial loss is incurred by cheesemakers and their patrons through defects that might be prevented, I naturally am anxious that the services of our staff of instructors should be productive of more and more lasting benefit. I do not believe we have the slightest reason to fear for the future of the cheese industry in Eastern Ontario if we make any reasonable attempt to put into practice what we all know to be necessary to the making of good cheese. Let us then keep these points in mind. Let the losses sustained by many in 1921 be a permanent lesson for the future, and begin now to make provision for such a season in 1922 that will make us forget the difficult season just closed, and of which I have had the honour to present this report.

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## CREAMERY INSTRUCTION IN EASTERN ONTARIO.

Mr. L. A. Zufelt reported as follows regarding creamery instruction and the general conditions of the butter industry in Eastern Ontario:

| | |
|---|---|
| Creameries in operation | 54 |
| No. creameries equipped with modern pasteurizers | 47 |
| New creameries established | 7 |
| No. remodelled or rebuilt | 3 |
| No. patrons supplying cream, about | 15,000 |
| Average price received for butter | 38c |

The quality of the butter made in Eastern Ontario is now of a fairly uniform type, and the makers are to be congratulated on the excellent showing they have made at the various exhibitions and scoring contests.

Special Instruction.—The special course of instruction given to the creamerymen each year at the Eastern Dairy School is largely responsible for the excellent standing of Eastern Ontario butter. It has created a friendly rivalry wherein each maker is endeavouring to produce a superior quality. They have come to realize that whilst they are competing with each other for business they must also co-operate and work together in order to promote quality.

Defects in Quality.—The defects still existing in our butter are due altogether to the acceptance of badly fermented cream rather than to any want of knowledge or lack of proper methods of manufacture. This is our big problem for immediate solution: "How to get rid of the small percentage of inferior cream which is affecting our whole output of butter." I think I am safe in saying that 90 per cent. of our inferior butter is due entirely to the receipt of cream absolutely unfit to be made into butter.

There is only one remedy that I can see that would be effective, and that is for all creamerymen to agree to absolutely refuse to accept cream of this character. I am satisfied that if we could eliminate this one character of cream we would not produce one pound of second grade butter in Eastern Ontario.

General Conditions.—The creamery industry is in a very satisfactory condition. Most of the plants are well equipped and are turning out a fairly satisfactory quality. Owing to the peculiar conditions prevailing whereby 80 to 90 per cent. of the entire output goes direct from the factory to the retail trade, we have not been able to establish a reputation for quality in the large wholesale centres. What little butter does find its way to these markets is hardly representative, and is made up of odds and ends which the creameries have on hand after supplying their regular trade.

# DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO

## OFFICERS FOR 1922

*President*—J. N. Allen, Dunnville.
*First Vice-President*—R. Johnston, Princeton.
*Second Vice-President*—Harry Mannell, Woodstock.
*Third Vice-President*—F. A. Keyes, Elmira.
*Secretary-Treasurer*—F. Herns, London.

*Directors.*

T. Ballantyne, Stratford.
Garnet Bain, Lakeside.
F. A. Thompson, Embro.
J. Newbigging, Listowel.
G. M. Cary, Petrolia.
H. York, Harrietsville.

*Representatives.*

*Western Fair, London.*—F. Herns, London; C. J. Donnelly, London.
*Canadian National Exhibition, Toronto*—F. Herns, London.

*Auditors*—E. Nelles, London; J. C. Hegler, Ingersoll.

## FINANCIAL STATEMENT FOR 1921.

Receipts.

| | |
|---|---|
| Cash on hand from previous year | $70 36 |
| Members' fees | 282 00 |
| Legislative grant | 2,000 00 |
| Money received from prosecutions | 707 00 |
| Donation for special prizes | 50 00 |
| Sale of dairy exhibits | 2,330 57 |
| Advertising in convention programme | 332 00 |
| Total | $5,771 93 |

Expenditure.

| | |
|---|---|
| Cash paid for prizes | $523 00 |
| Expenses of convention | 188 43 |
| Stenographers' salary, $598.00; Directors' expenses, $156.65 | 754 65 |
| Postage and stationery, $99.58; Printing, $300.85; Advertisements, $86.60 | 487 03 |
| Judges' fees and expenses | 53 55 |
| Special officer's salary, $211.75; Expenses, $141.75 | 353 50 |
| Periodicals for members | 198 80 |
| Cost of reporting | 35 00 |
| Purchase of dairy exhibits | 2,327 56 |
| Office expenses, light, cleaning and sundries | 106 80 |
| Office rent | 180 00 |
| Telephone and telegrams | 80 87 |
| Express and cold storage charges | 30 20 |
| Half fines paid to factories | 353 50 |
| Auditors' fees and expenses | 15 00 |
| Refund to members | 1 00 |
| Interest on overdraft | 5 41 |
| Purchase of cheese for scoring competition | 13 82 |
| Total | $5,708 12 |
| Balance | 63 81 |
| | $5,771 93 |

# DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO 1921

Following is a summarized report of the Fifth-fifth Annual Convention of the Dairymen's Association of Western Ontario, held in Masonic Hall, London, January 11th and 12th, 1922:

The President, Mr. J. Scott, Woodstock, presided, and in addressing the delegates stated: "In 1864, only 58 years ago, the first cheese factory was started in Canada, and in 1874, 48 years ago, the first cream separator was imported. In 1883 the first condensed milk factory was opened at Truro, N.S., and there are now 28 condensed and powdered milk plants in Canada, many of which are located in Ontario.

"To the introduction of the factory system of making cheese and butter and other dairy products, the invention of the cream separator, the establishment of cold storages, improved methods in milk production and manufacturing, better factory equipment, scientific research and supervision through sympathetic Government Departments, dairying owes its modern development."

## Extracts from Reports of Directors Covering Season of 1921.

While there was a partial failure of crops in some localities and unfavourable weather conditions over a considerable period, on the whole the past season for Western Ontario dairying may be considered as good.

In July, owing presumably to dull markets, one of the largest condensed milk factories closed. This made it necessary to open cheese factories that had been closed, in order to handle the milk. Part of this milk was distributed among cheese factories already operating in the neighbourhood, while some of the milk was skimmed and the cream shipped to the creameries.

The usual demand upon the cheese factories for market milk during the late fall did not develop to the same extent as in previous years, and therefore the normal output of fall cheese was maintained up to the end of the season. A number of cheese factories and most of the creameries will continue operations this winter.

A considerable quantity of cream was shipped over the border in the fall months, as the market and exchange rates were favourable.

The past season indicates that the period of abnormal conditions is passing, and that the balance of production between cheese, butter and other milk products is gradually being restored. There will not likely be in the future the marked swing from one line of dairy production to another, irrespective of the resulting disturbance eventually created in the general markets.

In the last analysis, the summer prices for dairy products in Canada is, for many years to come, likely to be controlled by the price of the exportable surplus.

An encouraging sign of the times is that milk producers are realizing the importance of taking a broad-gauge view of the manufacturing of dairy products, and several new, up-to-date factories are under construction, which factories when in operation will tend towards greater permanency in the industry. It may also be mentioned that several large cheese factories which were either closed or the milk diverted into other channels have again returned to the cheese industry.

The exhibits of dairy products in the refrigerated space provided in the dairy building at the Toronto Exhibition was for the third time placed by the

Provincial Dairy Branch, and was, we believe, a means of bringing more fully to the attention of consumers the importance of dairy products as a food.

The Cream and Milk Purchase Act has been the means of bringing about more uniform and correct methods in testing milk and cream. The Regulations of this Act will assist in securing uniformity under the Dairy Standards Act. Your hearty co-operation in connection with the administration of these Acts is solicited.

Mr. E. H. Stonehouse, President of the National Dairy Council, referred to the keen competition with which Ontario dairy products is faced in high quality goods from other provinces of the Dominion and foreign countries, and made a strong appeal to the dairymen to organize thoroughly and on sound business lines, both for production and marketing. He also said:

"While a great deal has been done for the dairymen in the passage of certain legislation during these last two or three years, the fact remains that it is up to us to help ourselves. We have had assistance (there is no question of that) maybe too much, and haven't been thrown upon our own resources enough. We have trusted to Governments or departments to do a whole lot of things for us we should have done for ourselves, with the utmost advantage to ourselves.

"In the first place, we producers must have, as I said before, an intelligent knowledge of the requirements. Then we must have legislation, because we will not, thousands of us, adopt anything, even in our own interests, if it is left within our own control or left to our own option. That is, there will be thousands of us, out of the hundred thousand men, possibly, who will say, 'We will do nothing, we will take no steps in this regard,' and if we do not take these steps we are the people who are going to suffer.

"The thought I wish to leave is that throughout the whole industry, from producer to ultimate consumer, we must have co-operation as far as our country is concerned, if we are going to compete in the markets of the world with our sister nations in the race with us."

In the absence of the Hon. Mr. Doherty, Dr. J. H. Grisdale, Deputy Minister of Agriculture for the Dominion, gave a very interesting address on "The Development of Agriculture in Canada."

In the first place, we must produce as cheaply as possible. In discussing corn this afternoon, I attempted to show that if we are to produce milk cheaply we must use cheap food, and corn was certainly the cheapest, and I would encourage every farmer to have a good large silo on his farm and devote a good large portion of his farm to corn for milk production. We must also produce freely. That is an absolute necessity. It may not be as profitable for the time as we would like, but if we allow ourselves to get out of the market it is doubly difficult to get back. For instance, take our bacon industry, if we are satisfied to keep on producing uneven carcases of bacon, good to-day and poor to-morrow, one side a model and nine or ten others in the same crate models of what they ought not to be, we cannot expect to hold our place in the bacon market. If we keep on that way, we will certainly lose that market, and then to get it back, wrench it from the Danish or Irish or Belgians, which will be exceedingly difficult, if not quite impossible.

It is essential, therefore, that we keep on producing, and at the same time endeavour to improve the quality. Efficiency is what is needed in all our production work. Efficiency is understood by the Canadian very often, as doing it in the way most convenient and demanding least exercise. Efficiency as understood by the European, is very often quite a different thing.

Let us, therefore, unite and work along these lines, specializing and getting our products known by the quality, not quantity, and we can do it, because we have the conditions and the products that will command the very highest rank in products of that kind. We can start with our dairy products, there are none better. New Zealand has outranked us in quantity, but not in quality, They can sell their butter here, perhaps, but they cannot beat us in quality; and the same with cheese. We have the climatic conditions if we only exert ourselves and use a little efficiency in the manufacture of this butter. There are very few products indeed that cannot be produced in this Dominion of ours, of just as high, if not higher quality than anywhere else in God's world.

The following addresses were also given, and persons desiring information along the lines indicated will please write the persons concerned:

"Corn for the Western Ontario Dairy Farmer," Dr. J. H. GRISDALE, Deputy Minister of Agriculture for Canada.
"The Marketing of Dairy Produce," J. A. RUDDICK, Dairy Commissioner, Ottawa.
"Dominion Education Butter Scoring Contest, 1921," GEO H. BARR, Chief, Dairy Division, Ottawa.
"Butter Wrappers and Cartons," A. L. GIBSON, Dairy Chemist, O.A.C., Guelph.
"Dairy Investigations Made in 1921," Prof. H. H. DEAN, O.A.C., Guelph.

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## DAIRY INSTRUCTION AND SANITARY INSPECTION, 1921.

Following is a summary of the report of Chief Dairy Instructor and Sanitary Inspector, F. HERNS, London:

There were no changes in the plans of dairy inspection, instruction, grading, etc., during the past season. Four cheese and four creamery instructors, one inspector for cream buying stations, and two inspectors for checking up milk and cream tests, were employed. Two official butter graders and two assistants, one to make Storch tests and one as general office assistant, were employed at the Toronto butter grading station.

Many factors enter into the field of progress and it becomes a more difficult problem each year to meet the many technical requirements in maintaining the general standard of quality of our dairy products.

It is evident that the balance of production was overthrown by the abnormal demand during the war period for milk products other than cheese and butter, but indications point to a readjustment of output and values.

FACTORIES.—114 factories were operated.

Five cheese factories that were closed in 1920 were opened for cheese making and several factories that shipped milk in 1920 made cheese. 43 factories were owned by producers and 71 by private individuals.

QUANTITY OF CHEESE, 1920.—There were 13,155,517 pounds of cheese manufactured in Western Ontario in 1920. The average number of pounds of milk required to make one pound of cheese was 11.4. The average price per pound of cheese was $0.267. 239,575,484 pounds of milk was utilized in the market milk, condensed and powdered milk trade. 77,989 pounds of whey butter was manufactured and whey cream sold to the value of $71,831.67. The estimated increase in the output of cheese for 1921 is 25 per cent. The total value of dairy products for Western Ontario for 1920 was $27,166,811.

QUALITY OF CHEESE, 1920.—During many weeks of the past season extremely warm weather prevailed and this period will long be remembered as one of the most difficult in the history of the industry to maintain the standard of quality.

A number of factories developed the usual warm weather difficulties, which were dealt with by the instructors as quickly as possible, and no large lots of defective cheese were produced. Many cheese, however, were badly heated in warm curing rooms and the keeping quality was therefore in some cases not all that could be desired. There were also a few acidy cheese, which was unusual, as the factories have, except under unusual conditions, practically eliminated this undesirable type of cheese. The fall cheese were of very fine quality and the standard was maintained throughout this period. Surplus whey at a number of factories made it difficult to pasteurize the whey, with the result that there was a tendency at these factories towards the old difficulty of yeasty cheese. Any neglect in proper whey pasteurization will certainly mean at certain seasons the delivery of some milk with this defect, and this condition must be avoided if the factories are to be free of this old trouble.

Lactometer Tests.—18,576 lactometer tests were made and 635 milk sediment tests; 124 patrons were visited in connection with defective milk.

Whey Butter.—Of the 74 factories skimming the whey, 29 made whey butter and 52 sold the whey cream. One factory made casein from the skim milk.

Pay for Milk by Test.—22 cheese factories, 5 shipping plants, all the condensing plants and all but two of the milk powder plants paid for milk by test.

Annual and District Meetings.—46 annual meetings and 5 special district meetings were attended by the instructors and myself. Total attendance of producers, 2,887.

Expenditure for Improvements.—Two new cheese factories were built at a cost of $9,000, and one new shipping plant costing $50,000. Several new plants are either under construction or contemplated for 1922.

$42,780 is the estimated expenditure for factory improvements.

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## CREAMERY INSTRUCTION.

F. Herns, London, presented the following report as Creamery Instructor for 1921:

Creameries.—157 creameries were given 445 full day visits and 128 call visits by the four creamery instructors.

Quality of Butter.—We entered into the season of 1921 with a short ice supply, and when warm weather developed and continued for a long period, it had the usual effect upon the quality of the cream, and therefore upon the quality of the butter. The percentage of yeasty, sour, over-ripe cream delivered was greater than the previous year, and, although the creameries did their best to cope with the situation, there was an amount of second grade butter produced, while some of the butter which graded first grade when made, lacked keeping qualities. Had it not been for the improved cooling facilities at a number of creameries, pasteurization, etc., the percentage of second grade butter would no doubt have been greater.

Quantity of Butter.—Western Ontario creameries manufactured in 1920, 29,743,820 pounds of butter. Adding 691,236 pounds of butter made at the cheese factories gives a total production of 30,435,056 pounds. This is an increase over 1919 of 4,076,282 pounds. Estimated increase for 1921 is 8.4 per cent.

Patrons.—56,489 patrons supplied cream to the creameries; the average per cent. of fat in the cream was 29.6 per cent.

Moisture in Butter.—The average moisture content of 980 samples of butter was 15.31 per cent.; 150 samples contained over 16 per cent. moisture, and were taken from 64 creameries; 98 creameries have moisture test scales. The moisture test should be used by every creamery man and no butter should be allowed to leave the creamery containing excess moisture.

Salt.—The average salt used and retained in the butter as indicated by 706 salt tests made was 4.23 per cent. and 2.97 per cent. respectively.

Coil Vat.—110 creameries now have coil vats, a distinct improvement in equipment.

Cream Testing.—95 creameries made daily tests; 31 creameries tested semi-monthly; 20 creameries tested monthly; 53 creameries carried composite samples of cream; 15 creameries have electric testers; 120 creameries steam turbine testers and 14 creameries hand testers; 76 creameries stir and sample cream direct from the cans; 24 creameries dump the cream in a large can, stir and take sample; 42 creameries have samples taken by the hauler; 1 creamery used McKay sampler.

Cream Test Scales.—96 creameries used 4 bottle scale; 19 creameries used 12 bottle scale. The 12 bottle scale has not been found as accurate as the scale of lesser load. These scales have a tolerance of 8 to 20 milligrams, and therefore any weights that are much over or under this tolerance are not correct.

In order to eliminate all incorrect or unstamped 9 and 18 gram weights, such weights are being replaced by correct, stamped weights. The instructors were given authority by the Federal Weights and Measures Department to exchange the unstamped weights that may be found, with correct stamped weights supplied them. This will eventually eliminate any difficulty on this point as regards accurate cream testing. Every precaution should be taken to keep cream test and moisture test scales clean and in a place where they will not be exposed to sufficient moisture to affect the bearings.

Pasteurize the Cream.—79 creameries pasteurized the cream, an increase of 29 over 1921; 55 creameries heated to 170 degrees for 10 minutes; 11 creameries to 160 degrees; 5 creameries to 180 degrees. Any attempt to pasteurize the cream without proper cooling facilities will result in failure.

Neutralize the Cream.—62 creameries neutralized (reduced the acidity of) sour cream before pasteurizing, an increase of 34 over 1920; 34 creameries used milk of magnesia lime; 10 creameries used hydrated lime; 7 creameries used Wyandotte; 2 creameries used bi-carbonate of soda, and 1 creamery used caustic soda.

Mechanical Refrigeration.—45 creameries now have mechanical refrigeration, and the average temperature of these storages was 26.5 degrees, compared with an average temperature of 49.5 degrees for the ice-refrigerated storages.

Grade Cream for the Churn.—9 creameries graded the cream into first and second grade before pasteurizing and churning.

If the mixing of first and second grade cream is practised, then the average quality of the butter will be influenced by the second grade cream. There is every reason to believe it will pay all creameries to separate the different grades of cream and churn separately these grades, as the increased price for No. 1 grade butter will more than make up for the price which may be obtained for the average mixed quality.

Expenditure for Improvements.—3 new creameries were built at an estimated cost of $30,000, and $129,360 is the estimated value of creamery improvements.

Cream Buying Stations.—279 cream buying stations were visited regularly and the operators given special instruction in cream testing, cream improvement, sanitary arrangements, etc. The cream test samples were checked in accordance with the regulations under the Cream and Milk Purchase Act, as were also the samples of all other plants where payment was made by test.

Excellent results have been accomplished, and by systematic inspection and instruction every cream buying station operator who tests cream commercially should become competent. Many of these cream-buying stations are country stores, and have no facilities for handling cream. If cream grading is to become successful in Western Ontario, the operators of these cream receiving stations, if continued, must be educated to grade cream.

Yeasts and Molds in Butter.—Professor Lund, Bacteriologist at the O.A.C., continued to examine samples of butter each week received from the grading station. Valuable information in connection with the sanitary conditions of the creameries, as indicated by the yeast and mold count of the butter made from pasteurized cream, was obtained, and defective manufacturing methods were detected which otherwise might have passed unnoticed. I wish to express appreciation of the work done by Professor Lund and his assistants in this connection.

Standard Cream Test Bottles.—May I again point out that there are too many types of cream test bottles on the Canadian market. Some ought to be eliminated, and only approved types of standard bottles be available. In this connection it may be mentioned that the dim line so frequently found on test bottles after long use makes it difficult to read the percentages of fat. The readings may be made clear by the use of a specially prepared black or red enamel.

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## Resolutions.

Among the resolutions passed were the following:

Expression of appreciation of the co-operation of the citizens and public officials of London and for the free use of the Masonic Hall.

Thanks to the Canadian Salt Company for the very handsome badges presented to the members.

Appreciation of the assistance rendered by Provincial and Federal Departments of Agriculture.

A recommendation that a temperature of 170 degrees for ten minutes be the standard for the pasteurization of cream for butter-making.

Opposing the proposed regulation requiring the wiring of cheese boxes.

Asking that the admission and manufacture of oleo in Canada be discontinued, as its use is now detrimental to the best interests of the country.

Pledging support to legislation making the grading of cream compulsory.

# DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

## OFFICERS FOR 1923.

*President*—Wm. Newman, Lorneville.
*Secretary*—T. A. Thompson, Almonte.
*Treasurer*—Jas. R. Anderson, Mountain View.

*Directors.*

| | |
|---|---|
| Renfrew | J. G. Gibbons, R. R. No. 3, Renfrew. |
| Carleton | W. G. Godkin, Carsonby. |
| Grenville | Jas. Sanderson, Oxford Station. |
| Lanark | M. B. Cochrane, R.R. No. 1, Almonte. |
| Russell | W. H. Olmstead, Leonard. |
| Prescott | Thos. Sauve, St. Isidore. |
| Glengarry | A. J. Robertson, Martintown. |
| Stormont | W. O. Wert, Avonmore. |
| Dundas | Alex. McGruer, Brinston. |
| Leeds | Geo. Leggett, Newboro. |
| Lennox | T. J. Winters, Newburg. |
| Prince Edward | Peter Collier, South Bay. |
| North Hastings | Jas. Haggerty, W. Huntingdon. |
| West Hastings | F. J. Knight, R.R. No. 6, Belleville. |
| Northumberland | Alex. Hume, Menie. |
| Peterboro | Geo. Gillespie, Peterboro. |
| Frontenac | Ed. Campbell, Hartington. |
| Victoria | Wm. Newman, Lorneville. |

## FINANCIAL STATEMENT FOR 1922.

| Receipts | | Expenditure | |
|---|---|---|---|
| By cash, members' fees | $142 00 | Ottawa pay sheet for directors | $436 70 |
| Government grant | 2,500 00 | Pay sheet No. 2, Kingston | 78 70 |
| Receipts from Dairy Exhibit | 2,759 18 | Prosecutor's expenses 1921, unpaid | 15 00 |
| | $5,401 18 | Lecturers' expenses | 326 65 |
| Overdraft Molsons Bank | 1,254 06 | Advertising and printing | 271 49 |
| | $6,655 24 | Rural publishing and subscriptions to "Farm and Dairy" | 29 70 |
| | | District meeting expenses | 144 75 |
| | | Officers' stationery, postage, telephone and express | 88 38 |
| | | Officers' salaries | 600 00 |
| | | Official stenographer | 90 00 |
| | | Dairy exhibit expenses | 4,058 54 |
| | | Debit to Molsons Bank last audit. | 455 56 |
| | | War tax, Molsons Bank | 3 74 |
| | | Interest, Molsons Bank | 56 03 |
| | | | $6,655 24 |

## DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO 1922

The Forty-Sixth Annual Convention was held in Belleville on Wednesday and Thursday, January 3rd and 4th, 1923.

Mr. M. M. Empey, Napanee, the President, occupied the chair, and delivered a very fine address, stressing particularly the need of improvement in quality of our dairy products. He expressed satisfaction with the results of a season's experience with the enforcement of the Dairy Standards Act, and spoke encouragingly of the prospect of selling dairy products on a quality basis, and also of the marketing of dairy products through co-operative agencies. Among the difficult problems facing the dairymen for solution is the problem of the small, poorly equipped, and insufficiently manned cheese factory in Eastern Ontario.

Mr. G. W. Muir, of the Animal Husbandry Division of the Experimental Farms, Ottawa, spoke of experiments with the feeding of beet pulp to dairy cows and comparative values of corn versus sunflower ensilage for feeding dairy cows. Experiments show that it does not pay to feed valuable milk and other concentrates to calves of the dairy breeds.

Result of a Dairy Calf Feeding Experiment shows that farmers would be well advised to dispose of their surplus calves at birth rather than to attempt to make profitable veal calves out of them by feeding valuable milk and other concentrates. Mr. Muir also stressed the point of the necessity of providing in the dairy cow's ration sufficient mineral matter as a preventative of sterility and abortion.

Information on these subjects can be secured by writing the Publications Branch, Department of Agriculture, Ottawa.

G. H. Barr and Joseph Burgess gave a demonstration of cheese grading by exhibiting to the members cheese of various qualities and grades.

Mr. Barr spoke of the need of the dairymen unitedly getting behind the grading of dairy products with a view to competing successfully with competitors in the British market. A good lively discussion followed, in which Mr. Burgess very lucidly demonstrated the various types and grades of cheese.

James Alexander, cheese exporter, of Montreal, spoke of his thirty years' experience in the export cheese business, and referred to the superiority of Canadian cheese over New Zealand. He, however, warned of the future competition from New Zealand. He stated that only 2% of Belleville cheese was of second grade quality. He thought the Government should legislate against the shipping of cheese before they are fifteen days old.

At the evening session, Mayor Charles Hanna gave an address of welcome.

Miss Helen Campbell, Dairy and Cold Storage Branch, Ottawa, gave a splendid address on The Federal Milk Utilization Service. Copies of the address may be had by writing to the Dairy Division of the Department of Agriculture, Ottawa.

## ADDRESS

### Hon. Manning W. Doherty, Minister of Agriculture

Among other things the speaker said: The dairy farmer of this country has fared as well as the farmer in any other branch of agriculture. Let me also go one step farther and say, speaking of the farmers as a whole in this Dominion, that though they may not be satisfied with the returns which have come to them from this year's labour, the farmers of Canada to-day stand at the completion of the year in a better position to my mind than the farmers of almost any other country in the world.

I wish to pay tribute to the spirit which has been shown by them in this year of trial. I was fearful during the early part of the year, when the prices of farm products crashed on all sides, although the price of other products did not crash to the same extent, that the farmers would become panicky, and I was fearful that they would dispose of their live stock, but such has not been the result to any extent.

As to the outstanding events of the dairy industry during the year, I want to mention just two or three of them, and I probably cannot help saying just a few words about that pug-nosed Dairy Standards Act. I cannot claim to be the father of this child, but since I have to accept responsibility of having provided him with teeth, I should at least make some reference to just how he has behaved through the year and the chances for his future behaviour. Although he has had a fairly stormy passage, he has come through not too badly, and, unless I am misinformed—and I think I am not—in the not distant future, the dairymen of the Province of Ontario are going to look back and wonder how it was that for so many years they allowed those who had charge of the dairy instruction of this province and those who were responsible for dairy education in this province to go here and there and up and down the highways and byways preaching quality in all products that were being produced, and at the same time maintaining the standard of buying on an entirely different basis. Already good results have come from the enforcement of the Dairy Standards Act. You cannot, of course, expect any marked results in one year. This year, it took on an average 11.14 pounds of milk to produce a pound of cheese as compared with last year, when it took 11.27. That is not very much, but let me say to you, it is my opinion that before the expiration of two more years, the number of pounds of milk to make a pound of cheese will have been reduced considerably, and it will ultimately mean a good many million dollars to the farmers of the province.

Let me say also that it is my opinion the Dairy Standards Act could not have been brought in at a more opportune time. There are those who say the time was not opportune, and that it should be brought in when prices are up and when you can sell the product without paying particular attention to the quality. In my opinion, it is the very opposite of that. At the present time, it is possible for any dairy farmer to weed out the low-class producing members of his herd with less loss than at any other time in the last many years, and if this country is to compete with other countries in the world's market, we must get down to economic production. You and I are aware that a year and a half or two years ago, the fat content of the milk of a large number of cows of this province had gotten down to a ridiculously low figure. It is necessary for the economic production of butter and cheese that these low-fat producing cows be weeded out from the herds and replaced by higher producing cows.

Mr. Doherty made an appeal for uniformly high grade products, if Canada is to compete in the markets of the world.

Mr. Doherty also referred to the awards taken by Ontario cheese at the Dairy Show held in London, England, and stated that it was the duty of the Government to advertise our products in the buying markets of the world.

As to the future of the dairy industry, it depends, as far as prosperity and development are concerned, upon the same fundamental factor as any other industry in the country depends. There are two great outstanding fundamental principles which must at all times be observed in order that any industry shall make progress and bring prosperity; one is that we shall have economic manufacture of high quality products, and the second is that we shall have an efficient and effective marketing system. With regard to the economic manufacture, let me say that this is largely a matter of science and experimentation.

After a reference to the splendidly equipped new Dairy School buildings at Guelph and Kingston, the Hon. Mr. Doherty stated that he had the greatest faith in the dairy industry of the province. "Knowing the dairy industry of this province is only in its infancy, I was bound to give it the best instruction that could possibly be given. I am confident that there is no country on earth that can produce a higher grade of dairy products than we can. I have had

| Name of Instructor | No. of factories in group. | Total No. of visits made to factories | No. of factories where instructors did testing. | No. of patrons | No. of samples tested | Average % of fat in all tests made | No. of factories paying by fat plus 2 method | No. of factories that did not pasteurize whey regularly | No. of factories making whey butter |
|---|---|---|---|---|---|---|---|---|---|
| Bensley, G. H. | 18 | 305 | 18 | 1,160 | 4,323 | 3.51 | 2 | 4 | ..... |
| Bailey, W. H. | 25 | 437 | 25 | 694 | 4,164 | 3.41 | 16 | 14 | 10 |
| Brennan, Chas. | 24 | 327 | 23 | 1,058 | 6,699 | 3.44 | 3 | 5 | 6 |
| Buro, J. | 25 | 425 | 20 | 740 | 6,012 | 3.60 | 11 | 6 | 3 |
| Brown, Freeman | 29 | 320 | 24 | 1,071 | 6,351 | 3.45 | 3 | 10 | 12 |
| Clark, Fred | 27 | 237 | 27 | 718 | 4,265 | 3.60 | 2 | 2 | 1 |
| Cheetham, S. S. | 32 | 256 | 29 | 822 | 5,321 | 3.34 | 16 | 20 | 18 |
| Dool, Fred | 26 | 287 | 24 | 779 | 4,101 | 3.50 | 3 | 6 | 3 |
| Echlin, J. H. | 28 | 283 | 29 | 876 | 5,006 | 3.54 | 2 | 1 | 17 |
| Howey, Hugh | 21 | 353 | 20 | 952 | 4,153 | 3.44 | 10 | 6 | 1 |
| King, Jas. F. | 21 | 630 | 21 | 732 | 5,039 | 3.70 | 5 | 21 | 1 |
| Linn, C. F. | 23 | 320 | 22 | 893 | 4,470 | 3.34 | 14 | 20 | 7 |
| Murray, J. A. | 26 | 347 | 25 | 875 | 4,215 | 3.18 | 7 | 21 | 6 |
| McMillan, G. A. | 22 | 444 | 20 | 657 | 5,583 | 3.50 | 14 | 8 | 2 |
| McAllister, Jos. | 22 | 327 | 22 | 659 | 3,762 | 3.80 | ..... | ..... | 1 |
| McAllister, Ed. | 22 | 315 | 22 | 705 | 4,580 | 3.56 | ..... | 1 | ..... |
| McKinley, H. A. | 23 | 356 | 20 | 689 | 4,567 | 6.61 | ..... | 10 | 4 |
| Mitchell, Jas. | 28 | 256 | 26 | 859 | 4,295 | 3.48 | 9 | 2 | 9 |
| Nolan, Peter | 32 | 326 | 32 | 847 | 5,929 | 3.35 | 12 | 1 | 17 |
| Norval, C. W. | 32 | 464 | 32 | 776 | 6,695 | 3.51 | 4 | 2 | 31 |
| Olmstead, W. H. | 22 | 330 | 22 | 567 | 3,985 | 3.60 | ..... | ..... | 1 |
| Rogers, E. T. | 24 | 478 | 24 | 625 | 5,039 | 3.74 | 1 | 13 | ..... |
| Rancier, Gilbert | 21 | 506 | 21 | 590 | 4,850 | 3.67 | 2 | 11 | ..... |
| Sandwith, H. B. | 27 | 323 | 26 | 635 | 3,800 | 3.34 | 4 | 2 | 1 |
| Trickey, M. O. | 23 | 587 | 23 | 780 | 6,350 | 3.50 | 2 | 4 | 10 |
| Whattam, T. E. | 20 | 280 | 17 | 1,500 | 6,343 | 3.50 | 6 | ..... | 14 |
| Wright, G. F. | 29 | 265 | 29 | 812 | 5,042 | 3.46 | 1 | ..... | 11 |
| Wright, W. O. | 23 | 625 | 20 | 605 | 4,683 | 3.65 | 9 | 2 | ..... |
| Ward, R. W. | 28 | 598 | 8 | 1,092 | 1,672 | 3.36 | 6 | 4 | 12 |
| Legault, A. | 16 | 179 | 11 | 310 | 544 | 3.86 | 1 | 5 | ..... |
| | 739 | 11,286 | 682 | 24,078 | 141,838 | 3.51 | 165 | 195 | 196 |

it put to me time and again that New Zealand can do this and she can do that. I have not had an opportunity of visiting New Zealand, but I know that while they have an advantageous climate, their advantages are offset by disadvantages. Their land is worth $250 an acre, and ours sells for much less, and we have advantages that are fully compensating." He concluded by outlining somewhat fully his views as to the needs in efficient marketing of our dairy products.

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## ANNUAL REPORT OF DAIRY INSTRUCTOR AND SANITARY INSPECTOR FOR EASTERN ONTARIO FOR 1922

G. G. Publow, Kingston

The year just closed has been perhaps of more than the average interest, owing to the fact that we were all working under new conditions made necessary in the fulfilment of the requirements of the Dairy Standards Act, put into force for the first time.

A year ago, when these new regulations were being considered, we were in a position of more or less doubt as to what their outcome would be in the

| No. of factories that skim whey and ship whey cream | No. lb. milk delivered to cheese factories from May 1st to Nov. 1st | No. lb. cheese made from May 1st to Nov. 1st | Average lb. milk to make a lb. of cheese | No. of factories with cool curing rooms | No. of factories that made improvement in building or plant | Estimated expenditure of same | No. of new silos built |
|---|---|---|---|---|---|---|---|
| 13 | 27,543,558 | 2,476,957 | 11.01 | 2 | 11 | 11,600 | 10 |
| 13 | 22,349,030 | 1,976,776 | 11.30 | 2 | 21 | 4,880 | 6 |
| 12 | 31,740,583 | 2,799,864 | 11.30 | 4 | 24 | 4,223 | 16 |
| 5 | 22,202,247 | 2,048,134 | 10.83 | 1 | 21 | 6,000 | 25 |
| 9 | 23,903,879 | 2,161,289 | 11.06 | 4 | 20 | 4,875 | 15 |
| 12 | 21,507,581 | 1,937,111 | 11.10 | ..... | 13 | 2,000 | 5 |
| 11 | 41,058,900 | 3,549,846 | 11.56 | 1 | 29 | 11,000 | 9 |
| 15 | 23,437,106 | 2,079,994 | 11.26 | 2 | 1 | 600 | 9 |
| 1 | 23,675,173 | 2,118,684 | 11.12 | ..... | 18 | 2,790 | 8 |
| 20 | 27,761,021 | 2,401,907 | 11.55 | 8 | 16 | 8,797 | 17 |
| 4 | 22,858,705 | 2,085,856 | 10.96 | 1 | ..... | 2,300 | 9 |
| 11 | 34,763,917 | 3,020,375 | 11.40 | 2 | 20 | 8,900 | 10 |
| 18 | 29,749,500 | 2,564,344 | 11.50 | 5 | 26 | 5,000 | 10 |
| 8 | 24,830,685 | 2,220,028 | 11.18 | ..... | 22 | 2,560 | 27 |
| 1 | 15,165,956 | 1,465,207 | 10.35 | ..... | 18 | 3,147 | 12 |
| 3 | 21,134,060 | 1,923,675 | 10.98 | ..... | 6 | 2,840 | 7 |
| 4 | 25,599,409 | 2,461,754 | 10.40 | ..... | 19 | 8,700 | 25 |
| 6 | 41,573,714 | 3,669,991 | 11.31 | 1 | 25 | 7,035 | 94 |
| ..... | 32,908,593 | 2,952,891 | 11.14 | 1 | 20 | 2,500 | 9 |
| ..... | 32,862,960 | 2,961,572 | 11.09 | ..... | 19 | 2,510 | 72 |
| 4 | 17,502,170 | 1,632,503 | 10.72 | ..... | 21 | 3,228 | 5 |
| 4 | 24,474,219 | 2,326,400 | 10.52 | ..... | 16 | 2,200 | 10 |
| 3 | 20,656,800 | 1,930,038 | 10.70 | ..... | 16 | 4,045 | ..... |
| 6 | 20,362,463 | 1,802,137 | 11.29 | ..... | 14 | 3,700 | 7 |
| 7 | 27,478,530 | 2,399,461 | 11.41 | 1 | 8 | 3,650 | 57 |
| 6 | 37,067,434 | 3,232,636 | 11.46 | 6 | 19 | 6,700 | ..... |
| 2 | 34,290,432 | 2,996,550 | 11.47 | ..... | 18 | 5,412 | 23 |
| 3 | 17,359,326 | 1,608,859 | 10.78 | ..... | 8 | 1,500 | 8 |
| 12 | 24,639,447 | 2,177,984 | 11.31 | 10 | 26 | 10,192 | 7 |
| ..... | 4,097,534 | 398,464 | 10.28 | ..... | 5 | 400 | ..... |
| 213 | 774,554,932 | 69,381,279 | 11.14 | 51 | 500 | 143,284 | 512 |

face of considerable opposition, but we have passed over our first season under the new Act and are to-day, I feel sure, of a much more united spirit than has existed for some time.

The new Dairy Standards Act, as you know, went into effect on January 1st. Associated with this, was the offer of the Minister of Agriculture to provide instructors to do the testing of the milk at the factories, at a cost of fifty cents per patron for the season. So many took advantage of the latter offer that our staff of instructors had to be increased and the groups made smaller, so that the milk testing could be finished sufficiently early each month to prevent delays in arranging factory payments.

Of the 739 factories in operation, 683 applied to have a Government man do the testing, so thirty instructors were appointed in addition to Mr. Barker, who was my assistant.

As was to be expected, there were many obstacles to be overcome in the first part of the season. New equipment had to be installed by the factories and, in many cases, alterations made that caused delays. However, before the season was very far advanced, almost every factory was working along smoothly, and as the patrons became more confident and convinced that the testing was being done fairly and efficiently, it was most agreeable to see how former opposition melted away. It was gratifying to find that a great many of the patrons who were formerly opposing the fat test, after seeing the testing done at their own factory, went away satisfied and convinced of its fairness.

The keeping of duplicate samples is, I believe, one of the best procedures we have, as it gives the patrons a feeling of security and insurance against unfair readings, accidents, or spoiled tests.

The yield of cheese this year has been greater in percentage to a value of over $110,000. This amount would, no doubt, more than pay for all the cost of extra equipment installed and the extra cost of the instructors.

I will now give you a few of the more important comparative facts and some of the conclusions which we may naturally draw therefrom.

There were 24,078 patrons, 2,589 less than last year.

There were 231,000 cows.

The average yield per cow was about 3,400 pounds for six months, ending November 1st.

The total production of milk was 774,554,932 pounds during this period.

The total yield of cheese was 69,381,279 pounds, nearly seven million pounds less than in 1921, a decrease of about 10%.

It averaged 11.14 pounds of milk to make a pound of cheese, as compared with 11.27 last season.

There were 490,537 pounds of whey butter made, valued at $159,463, and whey cream valued at $107,068 was shipped.

There were nine factories burned down; eight of these were rebuilt at a total cost of about $26,500.

For ten successive years it has been taking more and more milk to make each pound of cheese, so it is at least encouraging to have a turn for the better.

Some of the reasons for the greater yield of cheese are as follows:

1. The fat test was higher.
2. The milk was better cooled and cared for.
3. The adulteration of milk was eliminated through payment on butter-fat basis.

Some of the results worth noting, which resulted directly from the testing, were:

1. Many patrons learned that their herds of cows were not as good as they believed.
2. A great stimulus was given to the investigation of individual cow records.
3. A goodly number of low testing cows were disposed of.
4. Better equipment has been provided at many of the farms for caring for the milk.
5. A check has been put on practices such as taking off cream for breakfast and putting water from rinsed pails into the milk can.
6. A greatly revived interest amongst patrons to do all they can to insure a better general milk supply.

All these things are what we have been working for for years, and I believe it has all helped very materially in improving the quality of the cheese. At any rate, the quality was much better this year than last, and while we must admit the average climatic conditions were better, still the difference is more marked than the average weather conditions, covering a term of years, would warrant.

Probably our greatest difficulty during the year was the securing of proper pasteurization of the whey at the factories. There were a number of reasons for this. Many of the factories had not the proper equipment. In old wooden tanks it was almost impossible to destroy germ infection. In many factories the whey was not entirely drawn away each day and the remaining surplus served as a constant source of infection which cannot be properly overcome.

In some cases scarcity of fuel was an added difficulty, and during part of the year there was a scarcity of water.

However, where it was satisfactorily carried out, I know of no one thing that did more than pasteurization of the whey to assist in improving the quality of the cheese.

In the reports of cheese defects, which I secured each week from the Government cheese grader at Montreal, it was notable that the vast majority were defects in flavour, such as "rancid", "fruity", and "not clean", and "open texture" due to yeast infection.

These defects we have proved long ago to be due almost entirely to unclean conditions at the factory, especially in whey tanks and in improperly sterilized pipes and utensils with which the whey comes in contact. There is no way of getting rid of these defects except to have clean conditions at the factory, and where whey is returned in the milk cans, there is no other way of preventing them except by the proper pasteurization of the whey.

Another fact in connection with the reports of the Government cheese grader that impressed me very forcibly and which I would like in return to impress upon every patron, factory owner and cheesemaker, is the large number of instances in which a few cheese, representing one or more vats, have been culled out of an otherwise good lot, because they were of inferior quality, and in a few cases rather bad.

Surely everyone with any foresight must realize what a danger to the whole industry lurks in such a condition as this, and should be rigidly guarded against.

It requires no imagination to realize the bad effect upon a dealer, or even more important, the consumer, if a few bad cheese are hidden under the mask of some of good quality. The good ones are passed without criticism as a matter of course but a few unexpected bad ones create a far reaching impression.

This is one of the reasons why I have always been in favour of a system of grading or inspection of all cheese before it is exported. The importance of this is, to my mind, becoming greater every year, because the competition with other dairy countries is greater every year. I hope our dairymen will realize this fact to a greater degree; that they will soon get over the mistaken idea that their interest ceases when the cheese leave their factory, and that they will protect their industry and reputation by inaugurating a system that will insure only cheese of first quality going into competitive markets. When the cheese are graded they should be distinctly marked so that all possible misrepresentation to the final consumer will be eliminated.

There never was a time in the history of the dairy industry when there was a greater need of co-operation and boosting on the part of all concerned. This applies to both the manufacturing and selling of dairy products, and if such is properly carried on we need have no fear of the future.

In recalling some of our past seasons' difficulties there is one that seems deserving of special mention, as it is of vital importance in connection with the payment for the milk.

I refer to the preservative used in the sample bottles. In order for a preservative to be satisfactory it must dissolve quickly, and be of sufficient strength to destroy and prevent germ life. Some of the tablets on the market for this purpose are very hard, are slow to dissolve, and as a result a number of milk samples spoiled. It seems to me that factorymen would be well advised in the purchase of the necessary preservative to see that they have a guarantee of efficiency in both the above respects.

These are the principal points which, sifted out from our collection of facts and figures, seem to be of greatest importance, and I feel confident that if an honest effort is made by all concerned we may look forward to the future with every encouragement.

In the course of discussion, Mr. Publow stated some of the instructors reported that every time they went to factories where trouble existed, the makers said they were being paid the full price for their cheese, but that was not the case later on after the grading was introduced. We had as many as five different makers in one factory. There are far too many makers in factories that should not be making cheese at all; but if we refused to let them take charge of a factory, there would be a number of factories that would have to close down. It is unfortunate that it is so difficult to get bright young men to take up this work. The farmers go to the expense of producing the milk and bringing it to the factory, but the man they employ does not buy the milk, and there is where the trouble comes in. There are some men in factories that you would not trust with a good pair of horses, but you will let them make your cheese. You should see to it that the men you have in the factories are capable men. It is unfortunate that we have so many small factories and men of little experience owning factories. As far as we know, most of the people are satisfied, and think their returns are coming all right, but that state of affairs cannot continue for ever. I appeal to the dairymen to see that everything is done that can be done to maintain our reputation for making good cheese. If the reputation of Ontario cheese goes down the makers have got to take the responsibility. You are the manufacturers, and if you take in milk that you cannot make good cheese from, you will have to shoulder the responsibility. You should co-operate with the man who employs you and ask him to co-operate with you. You should encourage uniform methods of caring for the milk. Lack of uniformity in method of caring for the milk is one of our greatest

weaknesses. Every change in the weather affects the product that you receive. We must have a uniform high grade raw material in order to make the best cheese. I am sure that if we can only show clearly, the average farmer of this country, that certain undesirable results arise from certain things, he will co-operate with us.

## ADDRESS

Mrs. Chas. McCowan, of Campbellford, was called upon to express her views regarding quality in dairy products, and stated that when visiting Women's Institutes throughout the provinces she found that the great fault with our cheese and butter lies in the farm home and the care that is taken of the milk. It is surprising in some homes to see the careless way in which milk is handled. It does not seem to make any difference what condition the utensils are in, as long as the cows are milked and the milk gets away to the factory. It has been said that since the Dairy Standards Act was put into force, 100 farmers in one locality have put in ice that never put it in before, they realized that they will get a better price for milk that is properly taken care of, and it becomes a question in dollars and cents and the milk will receive much better care. It has often been said that if you wish to control the world you must talk to the origin of that world, and it all comes back to the women. It is said the hand that rocks the cradle rules the world and I have often thought that the hand that rocks the cradle rules the quality of the butter and cheese that we make in Ontario. We know at the present time that the men on the farm have not the time, and inclination in some cases, to attend to milking utensils, and it falls upon the women to do that work; and it is surprising to see how few of them understand anything about the principles of the care of milk. Many times at Institute meetings, the question of the care of milk and milking utensils is brought up and discussed. One lady said to me, "I cannot make butter, it always has a bad flavour." I asked her how she took care of her milk. I found that she kept the cream too long, and she did not understand that a certain amount of starter should be put in the cream in the colder months. I saw this same woman a short time ago, and she told me her butter was now A-1. I would advise you that instead of bringing your lecturers to speak at meetings of this kind you should visit several of the Women's Institute meetings and start at the foundation, and then you will have a better quality of milk, because we cannot get away from co-operation between the men and the women. There is no problem in connection with farming in which women have not to co-operate.

J. A. Ruddick, Dairy and Cold Storage Commissioner, Ottawa, gave an address on "What is the Matter with the Canadian Dairy Industry." Copies of this address may be secured by writing to Mr. Ruddick.

## SECRETARY'S REPORT FOR THE YEAR 1922

T. A. Thompson, Almonte

The Dairymen's Association of Eastern Ontario has passed another milestone, and although there have been many ups and downs in the industry during the past season, yet on viewing the entire situation we are pleased to be able to report progress in almost every branch of the great industry which we represent and endeavour to foster in the Eastern section of this province.

The make of cheese was much smaller than last year while that of butter was materially increased, due largely to the dissatisfaction of patrons of cheese factories with the provisions of the Dairy Standards Act. There were many factories in Eastern Ontario that lost a number of their patrons who skimmed their milk and sent their cream to the butter factories, which in many cases reverted to their financial loss, as the average price paid for butter fat at the cheese factories was greater than that paid by the creameries, and next year will see the majority of these patrons back to the cheese factories again.

An appeal was made to the dairymen to prevent the marketing of green cheese, to equip the cheese factories with proper curing rooms, and to encourage home consumption of cheese.

It is quite apparent to any man who figures the cost of production that the dairymen are not receiving an adequate return for their labour, and much dissatisfaction prevails at the present time over the great fluctuation in prices, particularly of cheese, during the past season, but we must bear in mind that there is no civilized country in the world that is not producing dairy products to some extent, and it is therefore futile to conceive of any one country controlling the world's markets.

There are many improvements that could be made all along the lines in our prevailing systems between the producer and the consumer. But we must be careful not to tear down that which has taken long years of labour to build up. Progress is always hard and slow, destruction easy and swift.

While we must always welcome any movement that will better our conditions we must also bear in mind that the dairy industry, like the rest of the world, wants evolution not revolution.

The dairymen of Eastern Ontario wish to express their gratitude to the Hon. W. R. Motherwell, Dominion Minister of Agriculture, for his efforts during last session of Parliament to prevent the manufacture, importation and sale of oleomargarine in Canada, and although his efforts were not crowned with success the dairymen feel that they have in the Minister a staunch friend and champion of their interests.

We also wish to express our appreciation of the assistance received from the Department of Agriculture of this province presided over by the Hon. Manning Doherty. During the past year a dairy meeting has been held in each of the eighteen divisions. These meetings have been well attended and much useful information has thereby been disseminated.

The dairymen appreciate very much the valuable work being done by Mr. G. G. Publow, Chief Dairy Instructor of Eastern Ontario, and also by Mr. L. A. Zufelt, Principal of the Eastern Dairy School. These men have been untiring in their efforts to place the dairy industry of Eastern Ontario upon a higher level.

I wish to thank the President and Board of Directors for their kindness and forbearance and for the assistance they rendered me in the discharge of my duties.

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## ADDRESS

HON. DUNCAN MARSHALL, AGRICULTURAL COMMISSIONER, OTTAWA

I recognize that the last two years have not been very successful years in any line of farming in any part of Canada, and what has been true here has been true in every country in the world. We had a very quick drop from the

high prices which were obtained for a few years, and the farmers more than any other class of people have found it exceedingly difficult to adjust their affairs to the conditions as they have existed during the past two years.

I had the pleasure of being in the Old Country during the last few months and I found the farmers there in a similar condition to what they are here. The farmers who bought their land when prices were high find themselves now in some cases paying a higher land tax than they paid rental a few years ago, and the price of everything they have to market is exceedingly low compared with what they were a few years ago. The farmers are not alone in having to adjust their affairs and their business to new circumstances. I am sure that most business men and tradesmen all over the country are finding similar difficulties. There is just one thing about farming, and that is you cannot stop. Once you have begun you have got to keep going on, no matter what happens; and while we sometimes hear people say they are not going to sow crops if they cannot get better prices, we will find when the time comes around the farmer works just as hard, plants just as many acres of crop as he did the year before, and prays to the Lord that things will turn out all right. Agriculture has been the foundation industry in this country for a great many years and is bound to continue so, and the only philosophy that we should indulge in at the present time is, not whether or not we should go out of the business of farming but how we can best adjust our business to the circumstances that we now find facing us. Prices are low at the present time, and when prices are low for farm stock and other equipment it is a good time for the farmer to adjust himself, and it is a good time for the dairy farmer to thin out his herd and get rid of the stuff he has always been a little ashamed of having around his place. If he has a pure-bred herd he should keep only the very best. In a few years there will be an exceedingly keen demand for high-class cattle in this country, and the man who, at the present time, culls out his herd and who prepares for that day is the man who will receive compensation for the hard time he is going through at the present time.

At the present time, Great Britain is practically the only market that we have to supply. We have been temporarily shut out of the American market, not altogether closed out, but we have been partially closed out. The Britisher has the greatest appetite of any people in the world, but while he has the greatest appetite he also has the most discriminating appetite in the world. He has no objection to paying the price for the thing he wants to eat, provided he gets what he wants. The impression has been given by a number of speakers at this Convention that if you have something to market in Great Britain, the thing to do is to find out what the appetite of the Britisher demands and then give that to him. Do not undertake to educate him to eat the thing you have produced, because that will take more than a hundred years. Our best business now is to give him the thing he wants, and if you do that, he has no hesitation about paying a decent price for it. High-class farm products on the British market are never too plentiful, and there is always somebody willing, not only to pay the market price, but to pay a bonus if he can get the thing he wants.

Just at the present time some of our Canadian farm produce is not in very good repute on the British market, but I can say that is not true about cheese. Canadian cheese made a reputation for itself many years ago on the British market and it has been able to hold that reputation to a large extent. During the last few years New Zealand has made very good progress in improving her cheese so as to suit the British taste, and New Zealand has a reputation for producing the kind of butter the Britisher likes best, and in some cases has been

able to surpass Denmark in the production of high-class butter, and that has made New Zealand products of all kinds very popular in the British market. The result is that the merchant who is dealing in New Zealand butter is prejudiced in favour of New Zealand cheese; and so we find that Canadian cheese is suffering on the British market to-day because of the low quality of Canadian butter that is sold in Great Britain. If you get any one class of Canadian provisions on the British market that is not up to standard you prejudice, to some extent, every other Canadian product that goes on that market, because most of these things are handled by the same sort of dealers or the same men.

When the whole of Europe gets back to agricultural production, then we will come into a real kind of competition; and if Canadian goods then get a bad reputation on the British market, we will not be able to sell and the Canadian farmer will suffer as a result. For that reason, I believe that every honest effort that the Department of Agriculture can make to more or less standardize Canadian products and to have them graded as well as they can be graded for the export market, should be made. I was in Mr. Miller's place on Tooley Street a few weeks ago, when a customer called up and said, "I want 100 boxes of a certain brand of New Zealand butter, and I want 50 boxes of another brand," and he named the brand. Then the merchant said, "Won't you take some Canadian?" And the man on the other end said, "I would if I were in town, and had time to open every box; but I won't buy Canadian butter over the telephone." But he did buy New Zealand butter over the telephone. The Britisher has not only the most discriminating appetite, but he is the most discriminating buyer in the world, and he is about the keenest man in business of any class I know. No matter whether it be diplomacy or buying or selling, he does not consider whether the stuff comes from the Fiji Islands or whether it comes from any other place.

He will pay the highest price if it is first-class; and if Canadians are going to sell goods in the British market they will have to manufacture goods that will suit the British appetite.

After a strong appeal for efficient education along agricultural lines, the speaker continued: If there is one thing I want to do more than another it is to give men and women and boys and girls who live on the farm just a little inspiration about this business. I have men tell me who have gone into the dairy business that their boys would not milk cows. I went to one fellow's place and saw his cows, and I did not blame the boy. He was an intelligent boy, and would not milk that kind of cow. But I never saw a boy yet who had the right kind of spirit in him who would not milk a good cow, and who would not take a great deal of delight in milking a good cow. What is the most satisfactory thing about milking a good cow? Is it not in filling one pail so full that it won't hold a drop more, with the froth over the top, and have to set aside that pail and get another pail? If you get that kind of cow, your boy will be proud to milk it, and if you get him a set of scales to weigh the milk he will take a greater interest still, and will give that cow a pat on the flank when he is through milking, and give her a little extra bite so as to get a little more milk out of her the next time, and the old cow will respond. Set that same boy alongside an old rip of a cow that he has to pull at 30 minutes to get a quart and a half of milk as his reward, and when he gets through what kind of humour is he in? He will look at the milk, and he has to straighten his fingers out one at a time; and when he reaches for the milking stool, he has a great temptation to give the old cow a whop with it for luck. That kind of cow is usually a triple purpose cow. She is able not only to supply beef and milk, but speed, and she will often let loose

her hind legs and upset the pail and spill the little milk that she has given. Then the boy will reach for the fork and give her a prod. There is a war between the boy and the dairy business, and he will tell the old man he is going to leave the farm if he has to keep on milking. That is the kind of business that has been driving boys off the farm for the last twenty-five years. There is only one remedy for it, and that is to have more education and better ideas, not only about the dairy business but about every line of agriculture; and that will not only improve our boys and girls as farmers but as citizens of our country. We have in Canada millions of acres of land that is unproductive to-day that should be brought into production during the next ten or fifteen years. Nobody can calculate what the agricultural future of this country is; and whether it proceeds fast or slow, we must have contentment and happiness in the homes of the people who live on the land, and that can only be brought about by improved educational opportunities for the boys and girls of to-day who are going to be the farmers and farmers' wives of to-morrow. That is the biggest business that the Government has on their hands in Canada to-day and that is the thing that will lift agriculture out of the slough of despond which it is in at the present time. If this country is going to become great, it will only be by intelligence being applied to the cultivation of the soil and the production of all varieties of farm products. And when that is done, you will not be able to stop the rest of the country from flourishing. I am not saying that the farmer is the only man in the country. The business and professional men in every walk of life are as important as he is. But in a country like Canada where abundant wealth lies in the soil, the prosperity of the farmer means prosperity for every other business in the land.

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## NEEDS AND POSSIBILITIES OF ONTARIO DAIRYING

GEO. A. PUTNAM, B.S.A., DIRECTOR OF DAIRYING, TORONTO

I wish to briefly summarize the situation surrounding the dairy industry in the province and outline some of the needs and possibilities as I see them.

May I ask what the farmers of Ontario would do without the dairy cow? Many of the dairy farmers are dissatisfied with their net returns, but in this period of readjustment we are agreed, I think, that there is nothing which presents greater possibilities for a continuous income on a profit-producing basis than dairying. Dairying has been the mainstay of Ontario agriculture for many years, and will continue to be the backbone of our greatest industry for years to come, provided you deal judiciously with the present situation and make and take advantage of the opportunities in the business of dairying.

The output of cheese has decreased about 9½ per cent. during the past year, while the output of creamery butter has increased about 16½ per cent.; and we have a total value for creamery butter in excess of that for cheese, for the first time in the history of Ontario dairying, the difference being $2,398,000.

Do not take it for granted that dairying in Ontario is on the decline simply because the volume of cheese has decreased. We are consuming much more milk as milk, and much more cream as cream, and we are utilizing milk in various ways besides making butter and cheese—for condensed milk, powdered milk, ice cream, etc.

So much for our yearly output of milk, cream and manufactured goods. How about the immense plant—in buildings, cattle and equipment—represented by the 104,500 patrons who furnish milk and cream to the cheese factories and creameries; also those who are supplying the raw material for the condenseries,

powder factories, ice-cream plants, city and town milk and cream supply, as well as the great quantities consumed on the farms? Who can estimate the millions represented in the farm lands, equipment, and cattle, to say nothing of the $17,500,000 invested in manufacturing plants?

How about the quality of the goods we are producing? There is no question that the general quality of the cheese produced during 1922 was above the average of any other season, due in no small measure to the introduction of the Dairy Standards Act. The extra care given the milk, and the pasteurization of the whey, were important factors in improving the quality of the cheese. The favourable weather throughout the greater part of the year in part accounted for the improved product. A small percentage of the butter produced in the province is of higher quality than in previous years. The general quality has not, however, improved, and it would appear an impossible task to effect a general improvement until a method of improving the quality of the raw material has been successfully introduced. The manufacturing methods and workmanship in nearly all the creameries and a majority of the cheese factories are of a high standard, and it is quite apparent, therefore, that we must look largely to the raw material for improvement in the quality of the finished product.

As an evidence of the developments in the home market, I secured the samples of cheese in the exhibit before you, as offered for sale in one of the retail stores in Toronto:—

List of Samples in Exhibit

| | Quantity Purchased Ounces | Cost | Price per pound |
|---|---|---|---|
| Canadian | | | |
| Triangle Cream Cheese | 4 | $0.20 | $0.80 |
| McLaren's Limburger | 16 | .48 | .48 |
| Cream Pimento | | .20 | |
| Ingersoll Cheese | 8 | .25 | .50 |
| McLaren's Jar | 16 | .60 | .60 |
| " Brick | 13½ | .32 | .38 |
| " Kraft Swiss | 16 6/7 | .58 | .55 |
| " Kraft Pimento | 17 1/10 | .47 | .44 |
| Mild Canadian Cheddar | 20 | .50 | .40 |
| Medium " | 12 1/3 | .27 | .35 |
| Old " | 13 6/7 | .39 | .45 |
| Canadian Kraft | 16 | .45 | .45 |
| " Old Stilton | 24 6/7 | .70 | .45 |
| Imported | | | |
| Limburger | 16 | .60 | .60 |
| Camembert, Portions | 16 | .65 | .65 |
| " Twin | 16 | .60 | .60 |
| Gruyère, Solid | 16 | .55 | .55 |
| " Portions | 16 | .70 | .70 |
| Edam, Cake | 16 | .75 | .75 |
| Pineapple | 10 | .75 | 1.20 |
| Neufchatel | 2 | .10 | .80 |
| English Cheddar (Old) | 15 | .38 | .40 |
| " (New) | 15 | .30 | .32 |
| Gorgonzola | 18½ | .80 | .70 |
| Swiss | 18½ | .80 | .70 |
| Edam | 10¼ | .45 | .70 |
| Royal Crown (Loaf) | 14½ | .40 | .44 |
| " (Pimento) | 16 | .44 | .44 |
| Roquefort | 16 | .70 | .70 |
| Roman | 15 | .47 | .50 |
| English Stilton | 16 | .80 | .80 |
| " Cheddar | 16 | .90 | .90 |
| Domestic Swiss | 21¾ | .68 | .50 |

It would appear that the problem of marketing Ontario cheese consists of something besides collecting cheese at some central point and offering it for sale, to be passed on to the consuming public without any thought of merchandising or placing the industry upon a permanent business basis. Are the producers of milk in Ontario to allow Canadian cheese, although of known high quality, to be crowded off the British market because of lack of grading and proper merchandising, and are the producers to sit calmly by and see twenty varieties of imported cheese, most of it inferior in food value and flavour, but quoted at a higher price, sold in competition with Ontario cheese without making any effort to inform the public as to the superiority of the Canadian product?

The exhibit presented is really not so alarming as it at first appears, for I do not think the quantity of imported cheese sold has grown to any proportions. The situation demands action by the producers. Governments can help, but do not leave too much to the Government or to the trade.

Surely a survey of the annual output, the money invested, the quality of our goods and the marketing situation will impress us sufficiently to induce a very careful consideration of the needs and possibilities of Ontario dairying—or should I say "Canadian dairying"?—for in 1921 the output of Ontario's dairy factories was about $4,000,000 more than in all the rest of the Dominion.

The three outstanding needs in Ontario dairying are:

First, quality.
Second, an efficient marketing system.
Third, selection and care of the dairy herd.

## Quality Improvement

The great need in Ontario dairying is the production of high quality cheese and butter and all efforts towards improvement will be of little avail until the producers appreciate the importance of furnishing uniform high grade raw material. We will not get improvement if 90 per cent. or 95 per cent., or 99 per cent. of the cream in the individual churning, or the milk in one vat, is of first-class quality and the balance inferior. The measure of quality in the finished product must be based upon the quality of the poorest raw material used in the lot manufactured. A great deal has been said about the care of milk and the care of cream. What we want now is united action on the part of all interested parties in putting on a "better quality" campaign, and in any campaign for the improvement of the raw material we should secure the co-operation and support of the women folk on the farm.

Let us get together and formulate plans for an aggressive campaign in the hope that the manufacturing interests will see to it that the extra effort in the care of milk, and outlay in equipment will be rewarded by payment for the raw material on a quality basis. It is impossible to make a high grade flour out of poor wheat, and you cannot make the finest cloth out of an inferior yarn. Likewise you canot make clean-flavoured high quality butter and cheese out of inferior milk or cream.

## Marketing

Since spasmodic and somewhat effective efforts have been made in years gone by to induce the dairy farmers and manufacturers to produce high quality goods, lack of efficient marketing has been a continuous handicap. Unless we introduce a system whereby a definite standard will be fixed and the product

will be paid for on a quality basis, I see little hope for rapid or permanent improvement. The marketing proposition is not a problem which can be solved by government action, although governments should be and are prepared to give advice and assistance to the producers in their efforts to place the marketing of their goods upon a business basis. There is no problem of such importance before the farmers of this continent as that of the proper merchandising of their goods; and the broadminded business men of our country, financiers, tradesmen, and manufacturers are coming to appreciate the fact that permanent national prosperity rests in the efficient organization of agriculture, not for production only, but also for efficient marketing. It is a matter of national concern. Agriculture does not need artificial bolstering, but rather the introduction of business principles all along the line.

Would it not be well for the producers of cheese to study the market situation, since the methods which have been followed may result in high quality Ontario cheese not only losing ground on the export market, but also being crowded off our own market to a considerable extent, if the producers continue to be satisfied with the present methods of marketing.

Our producers and makers should consider very carefully the problem of putting Canadian cheese on the market in a variety of packages, and possibly manufacturing some additional varieties.

In the state of Wisconsin they are manufacturing a greater variety than we are here, and are putting their cheddar cheese up in a variety of forms, catering to the desires of the trade and the consuming public. If we do not, through the co-operation of all concerned, continue to improve and stabilize our cheese, and look to the marketing of it upon a proper basis, then great quantities of milk now utilized for cheesemaking will have to be diverted to other branches of the business, which will weaken the whole dairy industry of the country. One of the first essentials in successful marketing is a system of grading whereby our cheese will not lose its identity, but will be known as Canadian cheese of well defined grades both in the merchant's hands and on the consumer's table. An effective grading system must insure returns to the producers upon the basis of the quality of the raw material furnished.

We are paying 35, 40, and 45 cents per pound in the city of Toronto for cheddar cheese, the higher price being for cheese only a few months old. What did the producers receive for that cheese? You should see to it in your system of merchandising that the producer is receiving his just proportion of the price paid by the consumer. Surely an increase of 50, 75, and 100, and even 125 per cent., as between the prices paid to the producer and the price received by the retailer is altogether out of proportion.

I do not believe the dairy farmers of Ontario, in possession of all facts as to the present situation surrounding their own industry, and knowledge as to what has been accomplished through co-operative effort based upon recognized underlying principles and proper methods, will be longer content to see such an important industry inefficiently organized for handling, manufacturing and marketing purposes.

## Herd Improvement

Herd improvement and care is entitled to lengthy consideration. My intention at this time is to make a few observations and an appeal.

Can you call the large number of men who are receiving yearly returns of less than $310 ($308.75 average) from their herds, dairy farmers? They are simply "keepers of cows." The average of the cheese factory herds in Eastern

Ontario is 9½ cows, and the average income last year was $495, say, $600, when we allow for milk and cream consumed at home or made into dairy butter. Does $63 per cow satisfy the farmers of Ontario? It does not satisfy many, for we know that the returns per cow in many herds is more than double this figure. What then must be the output of the herds that pull down the average? When will the farmers generally recognize the importance of knowing what the individual cow is producing or is capable of producing? When will they realize that quality is of as much importance as quantity?

## United Effort

With the resources in herds, farm equipment, manufacturing plants, capable makers, and the readiness of the Government to make its dairy schools and field men of increasing worth to the dairy industry, it is surely the duty of the dairy farmers of Ontario to get together and study their own business from the first steps in production to the finished product on the consumers' table. The need for effective action on the part of the producers of milk and cream was never so great as at the present time, and the possibilities for placing the dairy industry of Ontario in a commanding position, both in the foreign and domestic market, are well within the reach of the tillers of the soil. All that is needed is a get-together determination. Recent events would indicate that the farmers are warming up to the question of marketing as well as production, and I bespeak most aggressive and very effective action in the near future. The very salvation of Ontario dairying, if not Ontario agriculture, depends upon the results of united action on the part of Ontario's dairy farmers. The eyes of other farmers are upon you, and your success will mean encouragement for those pursuing other lines, to follow your example in efficient, effective organization.

# DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO

## OFFICERS FOR 1923.

*President*—R. Johnston, Princeton.
*First Vice-President*—H. Mannel, Woodstock.
*Second Vice-President*—F. A. Keyes, Elmira.
*Third Vice-President*—Frank Thompson, Embro.
*Secretary-Treasurer*—Frank Herns, London.

*Directors.*

Thos. Ballantyne, Stratford.
G. Bain, Lakeside.
Jas. Newbigging, Listowel.
W. G. Medd, Exeter.
H. Yorks, Harrietsville.
A. E. Gracey, Simcoe.

*Representatives.*

*Western Fair*—F. Herns, London; Frank Boyes, Dorchester.
*Canadian National*—F. Herns, London.

*Auditors.*

E. H. Nelles, London.
J. C. Hegler, Ingersoll.

## FINANCIAL STATEMENT FOR 1922.

### Receipts.

| | |
|---|---|
| Cash on hand from previous year | $ 63 81 |
| Legislative Grant | 2,000 00 |
| Members' Fees, $260.00, less $27.00 credited to 1921 statement | 233 00 |
| Donation | 100 00 |
| Sale of Dairy Exhibits | 1,669 12 |
| Advertising in Convention programme | 339 00 |
| Sale of cheese used in Scoring Competition | 16 00 |
| Total | $4,420 93 |

### Expenditure.

| | |
|---|---|
| Cash paid for prizes, cheese and butter, $448.00; Dairy School, $15.00; Cheese and Butter Scoring Competition, $30.00 | $ 493 00 |
| Expenses for Convention | 218 29 |
| Stenographer's Salary, $624.00; Directors' Expenses, $161.30 | 785 30 |
| Postage and Stationery, $112.48; Printing, $281.57; Advertising, $74.16 | 468 21 |
| Judges' Fees and Expenses, $63.85; Lecturers' Expenses, $14.10 | 77 95 |
| Periodicals for members | 50 85 |
| Cost of Reporting | 35 00 |
| Purchase of Dairy Exhibits | 1,674 84 |
| Office Rent, $216.00; Office Furniture, $8.00 | 224 00 |
| Office Expenses, light, cleaning and sundries | 95 83 |
| Telegram and Telephone | 82 08 |
| Express and Cold Storage Charges | 21 53 |
| Auditors' Fees and Expenses | 15 00 |
| Interest on Bank overdraft | 6 29 |
| Purchase of cheese for 1923 Scoring Competition | 20 45 |
| Total | $4,268 62 |
| Balance | 152 31 |
| | $4,420 93 |

# DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO 1922

## OPENING OF DAIRY BUILDING.

On the evening of Tuesday, January 9, preceding the business sessions of the Association, a public meeting was held in the auditorium of the new dairy building, O.A.C., Guelph, which was formally opened and dedicated by Hon. Manning Doherty, Minister of Agriculture for Ontario.

J. L. Allen, Dunnville, president of the Dairymen's Association, presided, and in addition to that of the Minister, addresses were delivered by Prof. H. H. Dean, head of the dairy department; J. B. Reynolds, principal of the O.A.C.; J. A. Ruddick, dairy and cold storage commissioner for Canada; William Newman, president Eastern Ontario Dairymen's Association; H. S. Johnston, president Ontario Creamerymen's Association, and also by three former dairy school instructors, Mrs. Laura Rose Stephen, Mr. Mark Sprague and Mr. J. A. McFeeters.

## ANNUAL CONVENTION.

The Convention of the Dairymen's Association of Western Ontario opened on Wednesday morning, January 10th, at 9.45, in the Dairy Building.

## PRESIDENT'S ADDRESS.

Mr. Jas. N. Allan, Dunnville, Ont., President, expressed appreciation on behalf of the Dairymen's Association of Western Ontario for the efforts of the Minister of Agriculture of Ontario in obtaining the necessary appropriation for the erection of the new Dairy School, the co-operation of the President of the College, and the extensive study and experience of the Professor of Dairy Husbandry, H. H. Dean, which he has placed in concrete form in this magnificent building.

We recognize with favour the advancement being made toward the standardization of dairy products. We feel this to be especially necessary in that it will improve the quality of our products for export. This improvement seems timely in respect to creamery butter.

The increase in the receipts of creamery butter at Montreal of 168,733 boxes up to November 30th, 1922, over the same period in 1921, coupled with the fact that approximately 17,000,000 pounds of butter was exported from Canada up to November 30th last year, indicates that the status of the butter industry in Canada is changing from one almost entirely of production for home consumption to an exporting industry as well.

Present trade relations with the United States, formerly a fairly important customer for cream and butter, have made Great Britain our principal outlet for any surplus. Considerable of this business with the Mother Country in the early summer was profitable for producer, manufacturer and dealer. Our

concern should be that this butter shall be of sufficiently high grade to compete with butter of other countries on that market.

I wish to mention in this regard the desirability of our butter manufacturers in Ontario placing more emphasis on the quality of the product and less on the quantity of the output. Our zealous creamery operators throughout the Province have made it difficult for other operators to insist that the raw product be well cared for, which care we all recognize to be the basis of a good dairy product.

It is a matter of regret to note the decrease in the amount of cheese received at Montreal last year, which was about 344,826 boxes less than for the same period in 1921. This condition was no doubt partly due to milk being diverted to other channels, owing to the low price of cheese at the beginning of last season. The high price of cheese during the last few months has demonstrated the advisability of staying with an industry during periods of depression if we are to benefit from periods of good prices. The cheese industry is probably the branch of our dairy industry of which we may feel most proud. We shall be glad indeed when our butter commands the respect of the British tradesman that is enjoyed by our cheese at the present time.

The condensed and powdered milk trades have experienced more satisfactory conditions during the past year than in 1921. This improvement has been reflected in higher prices paid the farmers. Producers selling to the city milk trade have found a good market for their product at a satisfactory price.

I am indeed proud to say, as it is always possible to say at this Convention of the Dairymen of Western Ontario, although they have had their difficult periods, they have met them with courage and have increased their production from time to time, often under difficult circumstances, and now as always face the future with the utmost confidence.

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## DIRECTORS' REPORT, 1922.

The year just closed has from many standpoints been encouraging to those engaged in the dairy industry. Summer pastures were excellent in most sections and good crops, especially corn, means plenty of feed for wintering stock. Consumption of dairy products is increasing and the statistical position of butter and cheese is in favour of price maintenance. The condition of the milk and cream and the finished products was not affected to the same extent as last season by extremes of temperature.

Cheese and Butter Prices. Higher butter prices compared with cheese in the early part of the season diverted some milk from the cheese factories to the creameries. However cheese prices recovered later and the season closed with a short "make." The surplus butter output was exported, thus assisting to maintain a fairly uniform home market price. Less fluctuation in the exchange rate was also a factor in stabilizing the market. As mentioned in previous reports, a reviving export butter trade is necessary to dispose of our surplus and this trade must be developed on a quality basis if we are to compete on equal terms with other countries in the export market. The production of dairy products has proven to be one of our most stable and profitable branches of agriculture.

Milk Markets. In 1921 Western Ontario produced 19,512,675 pounds of cheese; 33,329,781 pounds of creamery butter, and 200,910,168 pounds of milk

was utilized in the condensed, powdered milk and market milk industries. The total value of these dairy products was $20,079,528.67. The demand upon the cheese factories for market milk during the late fall months was much greater than last season and therefore the normal output of fall cheese was not maintained to the same extent to the end of the year. A number of cheese factories and most of the creameries will operate during the winter.

The whey cream market across the border was practically closed the latter part of September, and this cream had to be handled in the local factories. A large cream-buying station operating at the border withdrew from the Canadian field.

The markets for condensed and powdered milk are improving.

Fall Exhibitions. Our cheese and butter makers are to be congratulated upon the large number of prizes won at these exhibitions. The quality and uniformity of these exhibits indicates that persistent dairy instruction, inspection and grading is resulting in steady improvement.

The Dairy Branch conducted a Dairy Educational Booth at the Canadian National, The Western, and Royal Exhibitions, giving special attention to emphasizing the importance of increased consumption of dairy products as health foods.

Exhibits and propaganda of this kind are valuable illustrations of the importance of placing dairy products attractively before the public and are of real educational value.

Legislation. The Dairy Standards Act which came into force last year has on the whole been well received by the trade. The Dairy Branch of the Department of Agriculture drafted regulations and issued full instructions to assist in carrying out the provisions of the Act.

The Milk and Cream Purchase Act has been the means of bringing about more uniform and correct methods in testing milk and cream. The regulations under the Act now conform with the Dairy Standards Act. Your hearty co-operation in connection with the administration of these Acts is solicited.

The Dairy Exhibition. This Exhibition held each year in connection with this Convention is educational in a practical way. In view of the fact that the Federal Government proposes to grade all dairy products for export, beginning in April of this year, it becomes very important that cheese makers and butter makers should have a knowledge of the standard grades; and for this reason an interesting feature will be the Cheese and Butter Scoring Competition.

Cow Testing. The Dairy Standards Act has shown that cow testing should be one of the outstanding voluntary efforts of the producers to improve the general productive standards of Ontario herds. A vigorous Federal and Provincial policy in this connection should be the means, if the producers will co-operate, of lowering the cost of milk production and increasing the net profits per cow.

Board Meetings. Your Directors have endeavoured to carry on the business of the Association to the best of their ability and wish to express appreciation of the excellent work done by the Federal and Provincial Departments of Agriculture and the Provincial Dairy Schools in connection with the dairy industry. There are now two up-to-date dairy buildings in the Province fully equipped with the latest and best machinery, and with this stimulating influence we ought to have the very best highly trained men available for the important technical positions in the manufacturing of dairy products.

Membership. The Association has a membership of 260 for 1922.

General. Indications point to a struggle for desirable markets for our surplus dairy products and these can only be held on a basis of quality and we must therefore continue as in the past to work for high grade products. The production and manufacture of dairy products is a specialized technical branch of agriculture and each year brings up new problems. We must avail ourselves of every assistance which science and good practice may offer to improve our methods and to produce only first grade goods. The export trade will absorb our surplus of No. 1 products, but the consuming public cannot be expected to take our second grade at a profit; and in the last analysis, producers and manufacturers will find that they are working under conditions where quality will always count in the world's market to a greater extent than ever before. It is, therefore, submitted that the payment for milk and cream on a quality basis is of equal importance to payment for the finished products on a graded basis. The payment for cream by grade is our next big problem. Let us hope that the basic principle of quality improvement may be recognized by producers as well as manufacturers. We as dairymen must in future take a more broad gauge view of these basic facts and to a greater extent look upon the dairy industry from a national standpoint, forget some of our personal difficulties, eliminate unfair competition, and continue to work for the benefit of the industry as a whole.

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## REPORT OF CHIEF DAIRY INSTRUCTOR AND SANITARY INSPECTOR, WESTERN ONTARIO, 1922.

F. Herns, London.

Progress in dairy methods involves many factors, and it becomes each year a more complex problem to deal with the many technical requirements in maintaining the general standard of quality of our dairy products and insuring the satisfactory general conditions of the factories and surroundings.

New men are continually replacing many of our most experienced operators who take up other lines of work, sometimes through lack of appreciation of their services by the patrons of the factories by whom they are employed. This means constant repetition in technical training of new types of men. Many such men become efficient while others do not.

### The Cheese Industry.

Factories. One hundred and sixteen factories, 5 of which made butter and 11 other milk products, such as milk powder, casein, shipping milk, etc., received 447 full day and 344 call visits by the four cheese instructors. Five cheese factories, closed in 1921, were re-opened for cheese making, and one factory closed.

Milk Supply. Seven thousand one hundred and twenty-six producers supplied milk to the factories. The estimated average per cent. of fat in milk for the season is 3.41 per cent., as compared with 3.34 per cent. in 1921. The average estimated loss of fat in the whey for the season was .221 per cent.

Quantity of Cheese, 1921. Nineteen million five hundred and twelve thousand and six hundred and seventy-five pounds of cheese were produced in Western Ontario in 1921, an increase of 6,357,058 pounds over 1920. The average number of pounds of milk required to make a pound of cheese was 11.34 as compared with 11.4 in 1920. The average price per pound of cheese was

$0.182 as compared with $0.267 in 1920. One hundred and sixty million, nine hundred and seventy-four thousand and seven hundred and eighty-nine pounds of milk was utilized in manufacturing condensed and powdered milk, and 39,935,370 pounds of milk was handled for market milk purposes by the milk shipping plants. Seventy-seven thousand nine hundred and eighteen pounds of whey butter was manufactured and whey cream sold to the value of $67,612.51. The total value of dairy products for Western Ontario for 1921 was $20,079,528.67 compared with $27,166,811 for 1920.

Quality of Cheese. The past season was, owing chiefly to the cool season and a better milk supply, less difficult to manufacture a fine quality of cheese than the previous year. The standard of quality was well maintained, although several factories developed the usual warm weather difficulties, but these conditions were remedied as quickly as possible and the percentage of defective cheese was small. Few acidy cheese were reported and the fall output was of very fine quality. Practically no yeasty or fruity flavoured cheese were reported, which indicates that the proper pasteurization of the whey is the best practical preventive of this defect.

Lactometer Tests. One thousand three hundred and five lactometer tests were made as compared with 18,576 in 1921. The reason for the less number of these tests is that the uniform payment of milk by test almost eliminated deteriorated milk. Six hundred and fourteen sediment tests were made and 47 patrons were visited in connection with off-flavoured milk.

Milk Cans. Four hundred and eight new milk cans were bought and 23 cans were condemned as insanitary and unfit for milk delivery.

Payment for Milk by Test. The four cheese instructors did the testing each month at most of the factories, while at the factories where the testing was done by the cheesemakers, the tests were checked up regularly; and by exercising careful supervision of the work, errors were reduced to the minimum. Many producers who in the beginning of the season were opposed to enforcing the Act are now its strongest supporters. It is true that weather conditions were favourable, but it may be truly said that the quality of milk from a sanitary standpoint was very much improved the past year. The co-operative support of those in charge of the factories in taking care of the composite milk samples, and assisting in every way to have the details of the work carried out in accordance with the regulations, was a big factor in the successful operation of the Act. The dairy instructors deserve a great deal of credit in this connection. They did everything in their power to see that all the work was done correctly, that the samples were properly taken and cared for and tested at regular intervals. The work was so arranged that no serious objection was raised to the time when the tests were made, as these were completed so far as possible within eight to ten days before or after the end of the month, thus allowing the checks to be issued at the usual period without delay. In a number of cases where milk producers expressed dissatisfaction with the test, the farms were visited, the instructors took samples of not only the herd milk but in many cases of the individual cows as well, and when these were tested in the presence of the owner, invariably the check tests answered the complaint and settled the argument.

It may be stated frankly that the administration of the Dairy Standards Act was not all plain sailing, but on the whole the Act has worked out very well. Some makers who are quite competent to make the cheese may show lack of ability when attempting to do the testing without assistance. There are some points in connection with the regulations under the Act that have not perhaps been enforced rigidly, but next season the line may be drawn reasonably closer.

Annual and District Meetings. Seventy-eight annual and district meetings were attended by the instructors, butter graders and myself during the past year. These meetings are valuable as a means of bringing before the producers questions of importance for their consideration and have an educational value far greater than may appear upon the surface.

Expenditure for Improvements. Three new factories built at a cost of $18,500 and $16,110 is the estimated expenditure on factory improvements.

## Creamery Report.

The three creamery instructors were at all times in close touch with the grading station and were therefore in a position to give attention to creameries requiring immediate assistance when the grade of the butter was found to score lower than usual. The instructors visited the grading station regularly, examined the butter from the different creameries and were thus enabled to make improvements where most needed. With the large number of creameries in each group, it was impossible to visit all the creameries as often as desirable. The butter graders gave assistance among the creameries whenever time would permit.

Creameries. One hundred and fifty-five creameries were given 397 full day visits and 166 call visits by the three creamery instructors.

Quality of Butter. Favourable weather conditions tended to improve the general quality of butter, as the cream reached the creameries in better condition than last season and a lot of good, well-keeping butter was turned out by our best creameries. The percentage of yeasty, sour, over-ripe cream delivered was less than last year, and if the intense competition for raw material could be adjusted, immediate good would result, as the general methods and facilities for handling the cream at the creameries is each year becoming more efficient.

Quantity of Butter. Western Ontario creameries manufactured in 1921 32,573,336 pounds of butter. Adding 756,445 pounds of butter made at the combined cheese factories gives a total of 33,329,781 pounds. This is an increase over 1920 of 2,884,025 pounds. Estimated increase for 1922, 11 per cent.

Patrons. Fifty-five thousand nine hundred and eighty-two producers supplied cream to the creameries; the average estimated per cent. fat in the cream was 29.26 per cent.

Moisture Test Scales. One hundred and eleven creameries have moisture test scales; the average moisture content of 806 samples of butter was 15.22 per cent.; 101 samples taken from 50 creameries contained over 16 per cent. moisture.

Salt. The average salt used and retained in the butter as indicated by 671 salt tests made was 4.65 per cent. and 2.86 per cent. respectively.

Coil Vats. One hundred and twenty-three creameries now have coil vats compared with 110 in 1921.

Mechanical Refrigeration. Forty-nine creameries have mechanical refrigeration. The average temperature of the mechanical storages was 31 degrees, and of the ice storages 48.3 degrees.

Loss of Fat in Buttermilk. Four hundred and six buttermilk tests were made; the average loss shown by the usual method of testing was .293 per cent. and by the alcohol method, 69 per cent.

Cream Testing. Ninety-nine creameries made daily tests; 27 creameries tested every two weeks and only 12 creameries now test monthly.

Pasteurizing Cream. Seventy-six creameries pasteurized all the cream; 15 pasteurized part of the cream, a total of 91 as compared with 79 in 1921. Sixty-five creameries heated the cream to 170 degrees for ten minutes; one heated to 185 degrees, 13 to 160 degrees, and 9 to 150 degrees.

Neutralizing the Cream. Sixty-eight creameries neutralized (reduced the acidity of) sour cream before pasteurizing; 41 used milk of magnesia lime; 10 ordinary or hydrate of lime; 5 caustic soda; 11 Wyandotte; 2 bicarbonate of soda.

Grade Cream. Eight creameries paid for cream by grade and 15 creameries graded the cream for the churn as compared with 3 and 9 respectively in 1921.

Equipment and Sanitation. One hundred and nineteen creameries reported with first-class equipment and kept in excellent sanitary condition. Some others are equipped with out-of-date machinery, while a few are not kept at all times in as good condition as the standard requires. I regret to say that it became necessary to take legal action against the proprietor of one creamery on this point, when a fine was imposed. Six others would have been dealt with in a similar way had they not complied with the regulations after fair warning. Every means is employed to get results, and legal proceedings are the last resort, but the time has gone by when dairy plant owners may expect to operate under insanitary conditions for any length of time. It is unfair to the public and to the dairy industry.

Yeasts and Molds in Butter. The Bacteriological Department of the Ontario Agricultural College continued to examine samples of butter each week received from the grading station; valuable information as regards the efficiency of plant sanitation after pasteurization was obtained. Defects in manufacturing methods were detected which otherwise might pass unnoticed. A close observation of this work for three years has convinced me that low yeast and mold counts usually mean clean, sanitary equipment and efficient general work. I wish to express appreciation of the work of the Bacteriological Laboratory in this connection.

Molds. Although there was less difficulty with molds this past year there was still considerable loss on this point. Again it is pointed out that the liners, wrappers and containers must be sterilized to eliminate this defect.

Cream Grading. There is no question but that a large number of our creameries are making a strong effort to improve the quality of the butter by better technical methods, more up-to-date equipment, the selection of cream for the churn, and, as already mentioned, the grading of cream. During the past season a lot of good merchantable butter was produced that went into local consumption, and into the export trade, without complaint as to quality, and the majority of our best creamerymen are turning out large quantities of uniform quality butter which is meeting the demand for their market and is giving satisfaction, but the chief factor that may be expected to further improvement in quality is the payment for cream on a quality basis. Paying for cream by grade should create the necessary incentive to produce No. 1 cream. This has already been proven by a few creameries. The market for No. 1 butter is unlimited, but for No. 2 butter it is uncertain, and for the establishing of an export trade is impossible, not only from an economic standpoint but also from that of a national reputation for fine butter. This important problem should again be given careful consideration, and some concerted action should be taken so that this vital question of quality improvement may be finally settled.

During the past fifteen years a great deal of educational work has been done by the dairy and other branches of the Department of Agriculture, through

dairy schools, dairy instruction, dairy meetings and conventions, the distribution of dairy literature, butter grading, the press, legislation, and in many other ways, all of which have been important factors in assisting to improve the quality of our dairy products. The commendable work has to some extent been handicapped by the lack of recognition of quality payment not only for the cream but for the butter as well.

Further steps in any campaign among the creameries for better cream must be backed up by the co-operation of the producers and creamerymen in support of fair and honest payment for properly graded cream if we are to reap the full benefit expected from the various activities that may be attempted. There must be the incentive of extra pay for first-grade cream and butter and it is believed that such a method of payment is now in sight.

## Checking Milk and Cream Tests under the Cream and Milk Purchase Act, 1922.

Three inspectors were employed for this work. Milk and cream tests were checked regularly at 155 creameries, 270 cream-buying stations, all the milk condensers, powdered milk factories, cheese and milk plants, while the cheese factory and creamery instructors and grading station assistants checked a number of tests at these points.

A large number of individual complaints regarding the test from producers in different sections of Western Ontario were also investigated.

It is a pleasure to report that the testing of milk and cream is being done generally along uniform lines and correct methods. I regret, however, to state that legal proceedings had to be taken against several factory operators for non-compliance with the Act or Regulations.

Most of the 9 and 18 gram weights used in connection with the cream test scales have now been replaced by stamped, correct weights. Exchanges were made by the inspectors when the weights were found either unstamped or incorrect. The cream test scales are being kept in much better condition, although some operators do not yet appear to realize the importance of careful treatment of these delicate balances. Immediate repairs were made or new scales ordered when found inaccurate. By constant, persistent efforts on the part of the inspectors and with the co-operation of the factory operators the testing of milk and cream is being put on an accurate uniform basis.

Opposition to this Act has practically disappeared, and many technical details which have entered into the difficulties of enforcing the Act are now cleared up, and I believe the majority of factory men find the Act a protection for them as well as for the producers, especially where unfair competition has existed.

Efforts have been made to administer the Act along reasonable lines, to give instruction in correct methods of testing where necessary, and to allow reasonable lenience in connection with unintentional errors.

On the other hand, where it was found after a fair warning and where all circumstances when investigated pointed to a deliberate infringement of the Act, prompt action was taken. The operation of this Act is believed to be producing excellent results.

Miss Helen G. Campbell, of the Dairy and Cold Storage Division of The Dominion Department of Agriculture, outlined the methods employed in placing before the public food value and health giving qualities of milk and its products. Those interested should write to the Publications Branch, Department of Agriculture, Ottawa.

## MARKETS FOR CANADIAN DAIRY PRODUCTS.

J. A. Ruddick, Dairy and Cold Storage Commissioner, Ottawa.

I remember some ten or twelve years ago addressing a dairy convention in the eastern part of this Province on a subject somewhat similar to that which I have to deal with on this occasion. After I had finished, one man came up to me and said, "Why don't you give us something we are interested in, when you talk at these conventions?" I was under the impression that I had prepared a fairly good review of the dairy situation, from an international standpoint, and that it was something the people all ought to be thinking about; but I found at that time it was very hard to get any interest in it, and that they were inclined to cause those preparing the programmes to suggest that some other topic should be discussed. Well, for the past ten years I have persisted in dealing with this subject in some form or other at these conventions, and am glad to find that the marketing end of the dairy industry is attracting very much more attention than at one time. I think that is a healthy sign, and a sign that producers and others are thinking more about their business and looking a little farther than the point at which they dump their milk into the wagon at the factory. It has been the practice for interest in the product on the part of the producer to cease at that point, but it should not be so, and I am glad to find it is not so to-day.

Those interested in marketing problems will be furnished with literature bearing upon the subject by writing to the Dairy Division, Department of Agriculture, Ottawa.

Prof. W. T. Jackman, Professor of Rural Economics, University of Toronto, gave an address on "Transportation as a Market Factor."

He was followed by Prof. A. Leitch, O.A.C., Guelph, who pointed out the great handicap under which farmers are placed by the prevailing rates and regulations for shipping live stock.

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## THE IMPORTANCE OF MARKETING ORGANIZATIONS FOR CANADIAN FARMERS.

J. B. Reynolds, B.A., President Ontario Agricultural College, Guelph.

In December, I had the privilege of attending a conference on co-operative marketing at Washington. Mr. Carl Williams, Vice-Chairman of the Conference, remarked at the close of the final session that the conference had been the most important gathering ever held in the United States in the interests of Agriculture. Among the impressive features of that impressive gathering these stood out prominently:

The agricultural co-operative movement was proclaimed, and generally accepted, as a movement in the public interest and not only in the farmers' interest.

As a consequence of this general opinion, industrial, governmental and financial interests were represented at the conference by spokesmen who are prominent figures in American affairs.

These spokesmen approved and endorsed the co-operative movement with complete unanimity.

Agriculture, in a nation that has become so largely industrial as the United States has become, was announced still to be the basic industry of that country.

And Agriculture in the United States was admitted, by farmers and financiers alike, to be in desperate straits, and requiring desperate remedies to restore it into its rightful place in the economic welfare of the people.

And lastly, co-operative organizations for marketing purposes were seen to be the best, if not the only, remedy for the present agricultural depression.

Following are a few of the observations made by speakers at the conference, by such men as Judge Bingham, proprietor of the Louisville *Courier-Journal* and chairman of the conference; Herbert Hoover; Eugene Meyer, President of the War Finance Corporation; Mr. Allen, President of the Bankers' Association; and Senator Capper, one of the prime movers in the agricultural block:

"The purchasing power of farm produce in 1922 is 70 per cent. of that in 1913."

"The nation cannot afford to pay less for its food than it costs to produce it."

"The farmer has suffered more than any other class. He has a right to complain. He has a right to demand relief."

"Unless we are going to continue breaking the speed limit toward the doom reached by Babylon and Rome through the impoverishing of agriculture, something must be done."

"We have come to the end of the period of exploitation when the farmer may look for his profits to the increase in the value of his land; but that profit must come, if it comes at all, from sound methods of production and marketing."

As between Canada and the United States, conditions are astonishingly similar. There is more identity than there is difference in our products, and in our marketing problems. The rural people in both countries are alike in their character, their ways of living, and their methods of working. And there is agricultural depression in both countries due in both instances to the rapid deflation in the prices of agricultural products in 1920, accompanied by the continued inflation of the prices of most, if not of all, other commodities and services.

The remedy that is believed to be effectual in the United States should be effectual in Canada.

Canadian farmers need marketing organizations because individual marketing is obsolete as a method of marketing and inefficient.

There is to-day outside of Agriculture scarcely a commodity and scarcely a material service, the price of which is not subject to collective bargaining or collective control. Labour is organized, and any man may, if he will, sell his labour through an organization. Small factories have been organized into large factories, not only to economize in the cost of production, but to enjoy the advantages of the large organization for purposes of marketing. The railroads have been combined and merged until we have in Canada one great privately-owned railway corporation, and one great publicly-owned system. Even this degree of amalgamation is not considered sufficient, and if you wish to gain any concessions in reduced passenger rates for excursions, you must address, not these great systems separately, but the Canadian Passenger Association, representing all the railways. Barbers, teachers, domestic servants, factory hands, doctors, lawyers, have their associations and their minimum wage scales. Minimum Wage Boards are a public recognition of the right to collective bargaining. Retailers' Associations handling various commodities are examples of the same tendency.

This universal movement toward marketing organizations is only a response to changing market conditions. Rapid communication of marketing news, world-wide transportation, the influence of advertising, the widening of human desires, and the raising of standards of living, have conspired to make almost every commodity a world-commodity. More and more the influence of the world demand is superseding the influence of the local demand. More and more world-market conditions are controlling prices. Not long ago the Canadian farmer took his grist of wheat to the flour mill, and brought back the flour and the bran and the shorts made from his own wheat, to furnish bread for his household and feed for his live-stock. The miller took pay for his services in kind. To-day the farmer sells his wheat and buys his flour at prices fixed by world conditions. Not long ago the Canadian farmer sold his hogs and his fat cattle to the local butcher or dealer. And the kind of pork and beef produced had regard chiefly to local demands. To-day the hogs and the cattle go to the great packing houses and in the type of production we are advised to consider the tastes of consumers beyond the seas.

This information regarding world markets—the demands and the prices that prevail outside of local conditions—and the ability to produce those commodities which satisfy the world markets, are quite beyond the capacity of the individual farmer to gain or to take advantage of.

What are the legitimate objects of co-operative marketing associations among farmers? By legitimate, I mean those objects which gain for their members their just dues, and which therefore have regard to the public interest as well as the interests of the class served. For no class can continue to suffer injustice or disabilities in marketing its commodities without harm to the public. Especially is this true of the farming class, because of the numerical and economic importance of the farmers.

The objects are not to fix prices or to profiteer by holding farm products merely for a rise in price. The objects are to find the consumer, to furnish food products that the consumer will buy, and to secure a just share of the price which the consumer pays.

The general regulator of price is the relation between supply and demand, but the law of supply and demand is not a law of the Medes and Persians. Its operation can be controlled by perfectly legitimate means, in the interests both of producers and consumers. The demand may be legitimately increased by improving the product, or the demand may be increased by advertising, or it may be increased, in total, by marketing the product over a larger period. Hence a marketing Association may have some control over demand by securing a uniformly better product, or a product more attractively put up. There is more butter eaten to-day in Ontario per capita than there was thirty years ago, because the butter is uniformly better. There are fewer apples eaten to-day in Ontario per capita than thirty years ago, because, outside of the commercial apple-growing districts, which export most of their apples, few good apples are to be had.

And it is possible to extend the period of consumption of semi-perishable foods, such as butter, eggs, and fruit, by holding the surplus products in suitable storage and carrying them over from the period of peak production and distributing them as evenly as possible over the year. In a measure, this is already done, but it is not done sufficiently by the farmers or in the farmers' interest.

Supply can be controlled by limiting production. I have heard farmers talk about limiting production, but I have never known a farmer, unless he

was a lazy one, to withhold his hand from sowing the seed when the season and the opportunity were kindly.

But there are two factors in supply which are controllable, and which should be controlled in the interests of producer and consumer. These factors are, the *time*, and the *place*, of marketing. The farmer is usually in the position of needing the proceeds of his labour as soon as the products can be conveniently marketed. If the majority of the farmers producing a commodity are in this position, it follows that their produce is "dumped" on the market at the end of the period of production, instead of being marketed in an orderly fashion, just as fast as the market can absorb it. The result is, either that some of it is wasted, or someone buys it at the dumping price, stores it, and proceeds to market it with due regard to the absorbing power of the market. The buyer is generally rewarded for his business sagacity by profiting to the extent of a wide spread in prices.

As to place of marketing, obviously the logical place is at the point of consumption rather than at the point of production. There may be a heavy surplus at the point of production, and a short supply at the distant point of consumption, or there may be a glut at one point of consumption and a shortage at another. The individual farmer scarcely can gain all necessary market information, nor has he command of shipping facilities sufficiently to direct his produce where it is most needed.

An illustration of lack of quality, lack of uniformity and dumping, all the results of individual marketing, is given in a report from the Christmas poultry market in a large Ontario centre:

"Our Christmas poultry fair was a lesson for any economist. Purely a case of dumping, and the inferior product either sacrificed or taken home. Every conceivable method of killing was in evidence, beheaded birds, broken-necked birds, ghastly exterior slashes behind the head, and a few properly killed. Despite the fact that feed is cheap, birds in poor condition were offered."

Another illustration is found in the report of the Deputy Minister of Agriculture for Canada on market conditions in Britain:

"One most striking peculiarity in favour of many of the products from our competitors was the uniformity in appearance and quality as contrasted with the great lack of uniformity in appearance and quality in our Canadian products, this applying more particularly, of course, to bacon, cheese and butter."

The products that are driving Canadian products off the British market are graded, packed, shipped and sold by marketing associations in competing countries, particularly Denmark and New Zealand.

It is reported that the British Columbia fruit-growers are about to form a central marketing association to control the distribution and sale of at least ninety per cent. of the fruit grown in British Columbia. It is stated that the British Columbia growers, having had two seasons of low prices, should be just about in the frame of mind to give better support to co-operative movement than they have ever done up to the present time.

Stories are coming to hand of every farm along several miles of road in an Ontario county being for sale. Is the present state of discouragement among Ontario farmers sufficient to drive them into co-operative enterprise, or must a still harder necessity oppress them before they will be induced to adopt modern business methods in marketing their produce?

At the evening session, held in connection with a banquet in the College dining hall, President Reynolds outlined the services which the College is prepared to give to the farmers of the province.

L. KLINCK, a graduate of the O.A.C., and President of the University of British Columbia, spoke of the benefit accruing from an interchange of information, views and ideals on the part of those engaged in similar work from all parts of the Dominion.

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## LOOKING BACKWARD.

PROFESSOR DEAN said in part as follows:—

The dairy business may be divided into three great classes: First, the producers of milk on the farm; second, the manufacturers; and third, the marketing of milk and its products; and what I shall have to say will cluster around these three thoughts. The striking thing in looking backward over progress made on the dairy farm, is the fact that we have now 62 cows reported with official or semi-official records of over a thousand pounds fat in one year, and most of them have records of over 30,000 pounds of milk in a year. That, it seems to me, is one of the most striking developments, so far as it relates to the dairy farmer, the wonderful development in the dairy cow.

The second part, as applied to the producer of milk, is the wonderful development and improvement in the feeding of cows, the building of silos and growing of green feed and the feeding of green, succulent feed to cows practically all the year round. There was a time not long ago when silos were practically unheard of on the farms of this country. The growth of green crops and feeding of green crops preserved in silos has had a wonderful influence on the development of our winter dairy business. We can scarcely realize what that has meant to our great dairy industry, the fact that we are able to get a large supply of milk, not only in summer, but also in winter. I can remember in the days of the dairy school, when we first began, we had to send fifteen, twenty, thirty, forty and fifty miles from Guelph in order to get a supply of milk and cream for our dairy school. Now that is all done away with, and we get a full supply of milk and cream close by during the whole winter term.

A third fact which stands out prominently in dairy farming is the wonderful development in application of science to the separation of milk. The evolution of the cream separator to my mind is one of the most striking things in the whole dairy business. When you think of the fact that the farmer or his wife can take the milk and immediately after it is drawn from the cow can run it through a machine and get the cream, and take it to the creamery, get the money and spend it before dinner, it is a wonderful development. All that is in practice every day on the dairy farms of this country.

And then the milking machine: There are some who say the milking machine is not a practicable machine. I believe it is the solution of the development of dairying on a large scale on the farms of this country. It is impossible at the present time to get the right kind of help to milk large herds of cows by hand, and that means the milking machine must come into its own, and the dairy farmer who has the machine and the cream separator, has certainly wonderful aids in the development of the dairy farm and the dairy cow, which as I state to my classes frequently, is the foundation of the dairy business.

Then there has been recently developed in connection with the cows a system of testing, known as "record of merit," "record of performance," "cow testing association," and more recently, development of "accredited herds." These are wonderful aids to the dairy farmer and will do wonders for the men producing milk on our farms.

Coming to the second part of my subject, the manufacture of milk: The striking thing is the application of the principle of pasteurization as applied to milk, cream and the products of the dairy. I think probably there are no men here now who were in the dairy school or class of '96. If so, they will remember during the winter of 1896 you pasteurized all the cream in shotgun cans. So far as I know, that was the first practical application of anything like a commercial scale of the principle of pasteurization in the manufacture of butter in Canada. At that time (can you believe it?) there was not a pasteurizer, a modern machine, manufactured anywhere in Canada or the United States. Now we have these machines made by our own manufacturers, wonderful machines, and these have done a great deal for the butter makers of this country. Yet, I regret to say, there are a large number who do not follow the system of pasteurization which gave them the wonderful lead they have in the manufacture of fine creamery butter; and I do not think we shall ever be able to compete with the Danes or Australians or New Zealanders until we adopt pasteurization and manufacture practically sweet cream butter. I have sometimes thought lately that too many of our dairymen have what I would call the "devil's degree" in dairying. The initials of the devil's degree in dairying are "D. A."—dirt and acid—and ninety-five per cent. of the troubles of dairymen and producers of milk are caused by people holding this degree. When you have overcome this tendency for people to hold this degree, you will have overcome one of the chief difficulties in the line of manufacturing in this country. How are you going to bring that about? That is the big problem. It cannot be brought about in any other way than by education, until the people understand what it means when milk is contaminated by dirt, when you have utensils contaminated by dirt, and you allow the acid to develop. I think it was Mr. Scott this morning called attention to this point, and when you allow your cream to get over-ripe, you have started the rotting process. Just as soon as the cream begins to sour the rotting process starts, and if you let it go too far, no matter what you do, you may pasteurize and neutralize and all the rest of it, your product is spoiled; and until we get that principle thoroughly ingrained in the butter and cheese manufacturers and farmers producing milk and cream for butter and cheese manufacture, we shall not make very much progress in this dairy business. I feel strongly on that point. I feel it is the cause of much of our troubles in making a fine quality of butter and cheese. It is an old story, told over and over again at our dairy conventions and everywhere, and yet it seems it cannot be repeated too often, because we see evidences of the bad effects of dirt, especially in milk and cream.

The third branch of my topic will perhaps not be so popular. This question of markets and marketing is a very, very difficult problem. I think, however, I am safe in saying that during the past twenty-five years we have seen the rise and fall of the cheese board or cheese market. Those of you who read the signs of the times cannot help but be struck by that fact. Something must take its place. The difficulty is to know what that something is, and until we solve that problem we shall have a very difficult question indeed to handle, but the question will be solved somehow in the very near future. If our farmers who are dissatisfied with the present system believe that they can work out a better system, then I think it is due them by the other fellows to let them see what they can do; and if they can evolve a better plan of marketing our dairy products than we know at the present time, I think they should be given every opportunity to try it. It can only be determined by experience.

Now as to the glimpses into the future. I believe the time will come when our dairy farmers will receive higher rewards for the labour they expend upon

their farms and cows, and will not have to work such long hours as seems necessary at present. I have been spending my holidays on a dairy farm for the last ten or twelve years, and I have found that getting up at five and working until eight o'clock at night is anything but fun, and I come in at night very, very tired indeed. And no wonder so many of our farmers feel they cannot continue that strenuous life on the farm. We must solve that problem. There must be some way by which our dairy farmers will be able to make returns on the capital invested and pay for the labour they put on their farms and their cows and have more time for leisure than seems possible under present conditions.

One thing which struck me particularly, in a visit I paid a few years ago to the famous Island of Jersey, was this: that the Jersey farmer does not work so hard as the Ontario farmer. He imported—or did at that time—much of his labour from Brittany and France, while he superintended the work on the farm. He used his head, and did not work very hard with his hands, generally speaking, and I believe something of that kind will be necessary in this country. We possibly shall never be able to have the cheap labour found on many European farms, but we do have something that takes its place, this is good machinery; and the development of machinery on our farms and in our factories will help overcome this drawback of extremely long hours and hard labour necessary in the dairy business. And that leads me to say something which I spoke of at the Creamerymen's banquet last month in Toronto. I believe there is great need to-day for what I call dairy engineers, men who have made a special study of machines, the application of steam power and electric power in operation of milking machines, cream separators, churns, pasteurizers and the hundred and one machines now operated in connection with our dairy business, and I hope the time will come when in our dairy department we shall be able to give a course in what I would call dairy engineering—men who are specialists in the application of machinery in the solving of the problems in connection with the dairy business. I hope the time will come in our department and dairy school when we will be able to give advanced courses, not only on the line of dairy engineering, but in condensed and powdered milk, ice cream manufacture, etc. These are some of the things I have in mind in our new dairy building, if we can get the support and necessary funds to carry on.

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## ADDRESS.

W. Bert Roadhouse, Deputy Minister of Agriculture, Toronto.

Since I have been here this afternoon, I have been in more or less an atmosphere of economic thought and economic discussion, with the result that my mind seems to refuse to run along any other lines. We have been going through for the past few years that period which people tell us is the reconstruction period, the period necessary from the disruptions of war to the more settled conditions of business. We have just closed another year of that period, and what are the outstanding conclusions—outstanding evidences of that year's experience in agriculture, and to what conclusions do they point? May I say that in the year just closed the agriculture of Canada showed a surplus of $50,000,000 over the year previous, notwithstanding the drawbacks of low prices and the disproportionate relation of agricultural values to other values? That indicates a certain measure of progress, and financial men tell us that while the

farmers of this country are not in a position and have not been attempting to enlarge their purchases, they have to a very considerable extent been meeting their obligations, and in some degree overtaking them, and that in itself is regarded as a very creditable and encouraging sign. I have spoken of the value of field crops. What of our live stock products? We find, as you are aware, the dairy industry has stood up perhaps better than any other branch, and in that connection I would like to mention this significant fact, that the prices of dairy products at the present time still show a percentage of forty over the prices of 1913, in the pre-war period, whereas the prices of feed stuffs which go into the production of these products are on a level with the 1913 period. That one point, which I quite recognize, is only a fraction in consideration of your problem, is in some degree an illustration of the buoyancy of the industry in which you are engaged. Closely allied is the swine industry, and there again we find an advance of twenty-four per cent. over 1913, and level with 1913 in feeding stuffs. These are facts on which we may base the soundness and stability of this particular branch.

When we look, however, to other branches of live stock, we find there has been an exceeding liquidation in beef cattle, and to some extent in sheep, because the price of these commodities has gone away down in the scale, and the result has been that it has been unprofitable to carry them, and they have been rushed to market; but coming to the end of the year, we find this liquidation has already had its effect, that there is now evidence of steadying prices, the law of supply and demand is about to enforce itself once more, and we may expect a steadying condition in that branch of the industry as well as any other. We are still being confronted by this great disparity between agricultural and other values, and can only as reasonable men come to one of two conclusions: It is impossible to think that these values can continue in the disproportion shown in the past, and either other values must come down or agricultural values must go up. On the horizon I see few signs of other values—labour, for instance, and transportation—only slowly coming down, and that forces us to the one other alternative, to expect a continuous steadying and perhaps increase in the value of agricultural products, in order to bring the various industries in this country back to that level on which they must be before the proper degree of progress can be expected and worked out; and so I think that is the prospect to which we must look forward. It seems to me the worst is behind, and that there are brighter and better times ahead; and so, while I would not present to you a picture of gloom, I would like to present another picture, a picture of that lonely figure, the man behind the plow. Lonely, did I say? In literature, in art, in poetry, the farmer is invariably pictured as a lonely figure; but it seems to me in this day when he comes together in organizations such as this, and plans in groups for social and other purposes, he has cast aside that element of loneliness in which he has been enshrouded throughout the years. But be that as it may, that is the figure I would hold up before you to-night. On his back there is carried the burdens of reconstruction, wearily yet cheerily, slowly but steadily, he is bearing that burden across the trying stages between that era of dissolution and despair, that era of priceless heroism and unspeakable selfishness which we remember as the war, back to the time of progress to which we are looking forward. And as he carries that burden, he exemplifies those old-fashioned virtues, intelligence, industry and thrift, without which no real progress can be made and which must be applied to all our walks of life as they have in recent years to agricultural development, the agricultural phase of our activities, if the journey is to be completed by the country as a whole. And

so I present that figure as one that stands out in our current economic history as one to which we must give credit for the example of these efforts which alone can save us as a nation at this time; and I say to you, let us appreciate him, let us encourage him, let us help him in every way we can.

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## THE RELATION OF CREAM GRADING TO THE IMPROVEMENT IN QUALITY OF ONTARIO BUTTER

F. A. Keyes, Elmira.

In the time allotted to me I will try to give a few conditions of the creamery industry in Western Ontario as I saw it during this past summer, when I visited a number of creameries in Western Ontario and saw much Western Ontario butter.

I was somewhat surprised when I picked up the press last night and saw the report of our butter grader, Mr. John Scott; for according to his report it is worse this year than ever. We have more second-grade butter than the previous year, and when we take into consideration climatic conditions, comparing the two years, 1921 with 1922, I think we are worse than these figures show, because in 1921 we had unfavourable conditions such as I never saw before in my eighteen years' experience, and this year was an ideal year.

He also stated in his report that there were three creameries which have done really good work. If these three creameries, which he states are in Western Ontario, can do that good work, why cannot we all?

We have been talking about cream grading for two or three years at least, probably longer, and at the Creamerymen's Convention in Toronto in December we did not come to any conclusion, and are no nearer, as far as I can see, to cream grading than when we started out, unless it is through individual creameries. A few started last summer, our creamery among others, and we found it successful. We had a big improvement in the quality of butter, which of course meant we had a big improvement in the quality of cream. That necessarily had to come first. Now I stated at Toronto we were not ready for cream grading. I cannot see how a goodly number of creameries in Western Ontario are going to grade cream under the conditions they are getting their material. The fault does not rest with the farmer; if you go to the farmer and show him his cream is not in the condition you want it in, and talk to him intelligently and show him you will increase the price paid to him if he improves the quality of his cream, he will come across every time.

We lost a few patrons, but we were glad the other fellow got them. I do not want the kind of stuff they furnish.

How are you going to get good cream when you go away out miles and miles—fifty and sixty to a hundred miles? A man goes out with his truck from the buying station and drives fifteen or twenty miles and farther, gathers that cream once a week, through the hot weather, and takes it home to the town where he lives. He does the testing there that evening. That cream has to be shipped the next morning, anywhere from 25 to 40 miles by train; then it is unloaded from the train, taken another 25 or 30 miles across country on a truck. What is the use of talking about grading such cream? Who is to blame if that cream is not in the condition it should be before it comes to

the creamery? Is it the farmer or the creameryman? I say it is the creameryman, and I say it without any fear of successful contradiction?

I followed the butter that came from a number of these creameries to the Provincial grading station, which is open to the public. I made it my business to visit the station frequently this summer to see the butter being sent in and compare it with our own. That is the only way you can find out what kind of butter you are making—get it alongside somebody else's. Then you can find out your own standing and see both your own and the other fellow's defects and benefit by it. I saw quite a number of re-scores of that butter and also saw a good deal of butter after it had been in storage. The butter was just exactly as you might expect from the quality of cream that it was made out of. Now in our own case, we have no buying stations at all. We do not want them. We would not have them. I have turned them down.

Now there are a number of creamerymen in the business to-day who, it seems to me, went out for quantity regardless of quality. They were bound to have the turnover; it did not make any difference where they got it, or what condition it was in, but they would have the quantity. There are some men in the business to-day who surprise me very much by the quality of stuff that they are turning out, when I look at the privileges these men had, and what I considered they knew of the creamery business a number of years ago. But they seem to have that object in view, quantity regardless of quality. I just reversed it. That was my idea when I started out. I have kept that, and am more convinced than ever that that is the only way to improve the quality of butter in Ontario.

The farmer is suffering because of the conditions I have outlined. We are loaded down with No. 2 and No. 3 butter. There is lots of that stuff to be bought, but it is not the kind of butter that the trade wants; and it is forced on the market at a lower price, and those creameries making the good butter find that they have to take less money than otherwise because the market is loaded down with this No. 2 stuff.

Prof. H. H. Dean: How many grades did you make, Mr. Keyes?

Mr. Keyes: Just two.

Q.—What differential in price? A.—Three cents a pound fat.

Q.—Who did the grading? A.—The man who did the sampling; I helped him out at the start.

Q.—What standards did you have? A.—The standard for No. 1 was a nice, clean flavoured cream, not necessarily sweet. That was not a very high standard at all. Acidity was not taken into consideration except when the cream was foamy; that went into second grade.

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## MY EXPERIENCE IN CREAM GRADING IN 1922

R. A. Stratton, Manager Guelph Creamery Co.

In reporting our experience in cream grading for 1922, may I first be permitted to review a few of the steps leading up to cream grading at Guelph Creamery.

For years we have been convinced that little or no improvement would or could be made in the quality of our butter, un'ess the producers supplying the good cream received some encouragement or compensation for producing

good cream, and the careless or indifferent patron was penalized or made to feel that it did not pay to supply cream of poor quality.

In 1920 we adopted the individual can delivery, in preparation for cream grading, and have been living in hopes that the Ontario Government would enact legislation making cream grading compulsory.

After the question of grading had been discussed at the Creamerymen's Convention from all angles for some time, a committee composed of Wm. Newman, F. Herns, Mack Robertson, W. G. Jackson, H. S. Johnson, R. M. Player, M. J. Lewis and J. A. McFeeters were asked to draft a recommendation during luncheon and report back to the meeting.

This committee were unable to agree on the regulations to be asked for. This was a surprise to me, as no doubt it was to many others present. The difficulty appeared to be that, to give enough elasticity to the regulations to suit all, there was nothing left that any magistrate could work upon.

The discussion was continued for some time, but no one present could suggest a remedy. However, before parting, it was almost unanimously agreed by the creamerymen present (with one exception) that they would grade cream voluntarily in their creameries during 1922.

I believe the proper procedure is for each creamery to honestly adopt grading on its own responsibility, because we have so far to go before all the cream we receive would grade No. 1 if graded according to ideal conditions, that it is better to go slow but sure, until our cream supply is better than at present.

We circularized our patrons about April 1st to the effect that we would commence grading on May 1st. We did so, but did not make the differential in price until all the routes were collecting twice per week, since which time any patrons sending cream that graded No. 2, have been paid 3 cents less per pound fat.

It is really surprising how little complaint we have had from those whose cream has graded No. 2. We have lost some patronage, but if a patron will not improve, the other fellow is welcome to all our No. 2 cream producers.

It is true that we have not set as rigid a standard as we would like to do, and that time will demand, but we have made a start, and would not think of discontinuing grading, no matter what other creameries may do. Our opinion is that necessity will compel creameries to adopt grading if they have any regard for the reputation of their brand of butter.

Our buttermaker can, by culling out from 5 to 10% of the cream, make No. 1 butter from the balance, but he could make better butter if "All was as good as the best." We send back a statement with each lot of cream delivered, so that the patron does not require to wait until pay day or the end of the pay period before he knows what his cream is grading and before he knows whether he is going to get No. 1 or No. 2. I have not heard anyone take the stand that there is no necessity for grading, but as to just the regulations to adopt we cannot agree on.

Q.—You did not get any differential in the price you received for the butter? A.—We have been grading for some years, and when we were putting up solids we always graded and put the best in the solids and the second grade was made into butter for immediate consumption.

Q.—The price of the butter sold was all pooled, and the man who sent second grade cream was penalized for second grade cream? A.—He was, every time.

E. M. JOHNSTON: I cannot agree with Mr. Keyes, altogether, on cream-gathering stations. We get better cream from these stations than from lots

of good individual shippers. We collect it every day and it does not lie around for forty-eight hours. We unload right away and get better cream than from individual shippers, shipped every day.

MR. KEYES: You know, when I went to school I used to study grammar, and there were a lot of rules to learn. Then there were always some exceptions to these rules. I will tell you about some butter that came from the creameries getting their cream from buying stations. I did not intend to do this this afternoon. I have bought some butter that came from buying stations, and cut it up, and I know what it is like. I bought 150 boxes a week ago; part of it was shipped up and I opened half a dozen boxes, and I called the buyer up and said, "It is no use to me." Now I know where that butter came from. I know the creameries, and I know just as much about the butter that came from the creameries who were gathering their cream through buying stations as probably the most of you know. I cannot use it in my trade; my customers will not buy it.

Q.—Maybe you have a little better trade than anybody else? A.—Well, if we have, we had to have the quality butter to get that trade, and we do not get it through cream-gathering from cream-buying stations.

MR. STRATTON: I would back up what Mr. Keyes says about cream-buying stations. We have kept away from them, because we wish to produce quality.

MR. IAN WAY, Wellington Produce Company, Harriston: I have been very interested in the addresses of Mr. Keyes and Mr. Stratton. We started this spring to manufacture butter for the first time, and we decided to go in for quality, not quantity. We avoided buying stations. To overcome that, we bought two International speed wagons, and have covered territory on an average of between seventy and eighty miles a day, gathering in small five-gallon shotgun cans three times a week. Perhaps you say, "Well, anybody can make prize butter with cream of that nature." It is quite true. Up to the present time, since the first of April, we have manufactured pretty close to 160,000 pounds of butter, and out of the cream from which that 160,000 pounds was made, I can safely say we got not more than approximately 600 pounds of cream which would not go No. 1.

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## RESOLUTIONS

Resolutions were passed as follows:—

Asking the Provincial Government to provide for making moisture tests of all samples of butter sent to the Grading Station during 1923, and that the results of the test be incorporated as part of the score.

Expressing appreciation:

(a) For the hearty response and helpful co-operation of the President of the College and members of the staff in making the Convention a success.

(b) To the Minister of Agriculture, the Honourable M. W. Doherty, for the erection of the new Dairy School building.

(c) To the Dominion and Provincial Departments of Agriculture for the assistance rendered the dairy industry.

(d) To the Windsor Salt Company for the handsome badges provided.

Approving of the Dominion Butter Scoring Contest, and expressing the opinion that a Cheese Scoring Contest of a similar character would be beneficial.

Opposing the manufacture and sale of oleomargarine in Canada.

# Ontario Department of Agriculture

## ANNUAL REPORT

OF THE

# LIVE STOCK BRANCH
# 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO
Printed by CLARKSON W. JAMES, Printer to the King's Most Excellent Majesty
1923

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TORONTO
CANADA

To His Honour Henry Cockshutt,
*Lieutenant-Governor of the Province of Ontario.*

May It Please Your Honour:

I have the honour to present herewith for your consideration the Report of the Live Stock Branch of the Department of Agriculture for 1922.

Respectfully submitted,

Manning W. Doherty,
*Minister of Agriculture.*

Toronto, 1923.

# ONTARIO PROVINCIAL WINTER FAIR

Following are a number of comparative tables of attendance, gate receipts, and entries for a series of years; and the regular annual statement of receipts and expenditures for the year ending January 31st, 1923:—

ATTENDANCE

| | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|---|---|---|
| Friday | 1,195 | 4,287 | 1,794 | 790 | 2,932 | 402 | 537 | 1,171 |
| Saturday | 3,214 | ..... | ..... | ..... | ..... | 2,410 | 2,225 | 3,391 |
| Monday | 7,063 | 7,985 | 5,330 | 3,410 | 5,488 | 4,890 | 4,221 | 8,032 |
| Tuesday | 11,629 | 8,228 | 8,994 | 3,115 | 8,254 | 7,425 | 4,989 | 5,614 |
| Wednesday | 12,612 | 12,470 | 13,812 | 3,985 | 10,789 | 10,041 | 9,045 | 6,155 |
| Thursday | 6,915 | 8,711 | 8,022 | 1,329 | 5,686 | 4,877 | 5,670 | 3,887 |
| Total | 42,628 | 41,681 | 37,952 | 12,629 | 33,149 | 30,045 | 26,687 | 28,250 |
| Gate Receipts | $4,363 | $4,504 | $4,959 | $2,770 | $4,380 | $7,984 | $6,202 | $5,286 |

COMPARATIVE STATEMENT OF ENTRIES, 1915-1922

| | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|---|---|---|
| HORSES: | | | | | | | | |
| Clydesdale | 171 | 140 | 158 | 211 | 198 | 178 | 181 | 138 |
| Shire | 7 | 8 | 5 | 9 | 3 | 2 | 5 | 2 |
| Percheron | 28 | 27 | 32 | 42 | 39 | 23 | 21 | 29 |
| Belgian | ..... | ..... | ..... | ..... | 5 | 5 | 19 | 7 |
| Hackney | 44 | 22 | 35 | 36 | 21 | 16 | 18 | 21 |
| Standard-bred | 33 | 28 | 36 | 24 | 18 | 8 | 12 | 8 |
| Thoroughbred | 12 | 31 | 22 | 18 | 12 | 8 | 10 | 10 |
| Pony | 30 | 12 | 20 | 15 | 9 | 12 | 10 | 12 |
| Heavy draft | 51 | 34 | 24 | 43 | 37 | 48 | 60 | 49 |
| | 376 | 302 | 332 | 398 | 342 | 300 | 336 | 276 |
| BEEF CATTLE: | | | | | | | | |
| Shorthorn | 62 | 82 | 74 | 107 | 107 | 104 | 181 | 129 |
| Hereford | 27 | 19 | 43 | 70 | 40 | 72 | 73 | 103 |
| Aberdeen-Angus | 19 | 27 | 27 | 38 | 55 | 37 | 42 | 46 |
| Galloway | 10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Grade or cross | 83 | 67 | 31 | 40 | 56 | 69 | 55 | 76 |
| Amateur class | 57 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Export steers | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Inter-county baby beef | ..... | ..... | 3 | 5 | 12 | 11 | 10 | 15 |
| Finished cattle | ..... | ..... | ..... | ..... | ..... | 19 | 6 | 18 |
| | 258 | 195 | 178 | 260 | 270 | 312 | 367 | 387 |
| DAIRY CATTLE: | | | | | | | | |
| Shorthorn | 6 | 4 | 5 | 7 | 7 | 3 | 6 | 6 |
| Ayrshire | 53 | 41 | 36 | 43 | 49 | 27 | 28 | 21 |
| Holstein | 72 | 34 | 39 | 51 | 65 | 31 | 54 | 53 |
| Jersey | 4 | 24 | 19 | 25 | 9 | 13 | 13 | 14 |
| Grade | 11 | 11 | 6 | 8 | 4 | ..... | ..... | 5 |
| | 146 | 114 | 105 | 134 | 134 | 74 | 101 | 99 |

COMPARATIVE STATEMENT OF ENTRIES, 1915-1922—*Continued.*

| | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|---|---|---|
| SHEEP: | | | | | | | | |
| Cotswold | 62 | 65 | 56 | 68 | 56 | 41 | 53 | 78 |
| Lincoln | 36 | 25 | 45 | 18 | 31 | 45 | 66 | 78 |
| Leicesters | 33 | 31 | 35 | 67 | 48 | 40 | 77 | 83 |
| Oxford Down | 56 | 25 | 59 | 97 | 66 | 36 | 44 | 60 |
| Shropshire | 61 | 51 | 81 | 66 | 65 | 62 | 67 | 43 |
| Southdown | 50 | 51 | 56 | 81 | 73 | 56 | 97 | 73 |
| Dorset Horn | 26 | 42 | 21 | 45 | 43 | 28 | 41 | 79 |
| Hampshire / Suffolk | 35 | 28 | 34 | 64 | 56 | 54 | 55 | 30 / 40 |
| Cheviots | | | | | | | | 30 |
| Market wethers | | | | | | 96 | 90 | 90 |
| Grade or cross | 63 | 71 | 70 | 82 | 98 | 78 | 126 | 84 |
| | 422 | 389 | 457 | 588 | 536 | 536 | 716 | 768 |
| SHEEP CARCASSES: | | | | | | | | |
| Cotswold | 14 | 7 | 7 | 8 | 4 | 3 | 7 | 7 |
| Lincoln | 6 | 4 | 3 | 4 | 1 | 7 | 6 | 5 |
| Leicesters | 7 | 3 | 4 | 4 | 6 | 5 | 3 | 6 |
| Oxford Down | 11 | 4 | 6 | 10 | 3 | 5 | 5 | 8 |
| Shropshire | 13 | 7 | 8 | 7 | 5 | 8 | 7 | 6 |
| Southdown | 9 | 3 | 3 | 9 | 5 | 5 | 8 | 6 |
| Dorset Horn | 6 | 5 | 6 | 7 | 6 | 3 | 5 | 5 |
| Hampshire / Suffolk | 5 | 4 | 6 | 7 | 7 | 7 | 10 | 4 / 6 |
| Cheviot | | | | | | | | 4 |
| Grade or cross | 11 | 42 | 38 | 40 | 56 | 53 | 70 | 122 |
| | 82 | 79 | 81 | 96 | 93 | 96 | 121 | 179 |
| WOOL | | 27 | 21 | 29 | 49 | 40 | 43 | 54 |
| SWINE: | | | | | | | | |
| Yorkshire | 72 | 60 | 57 | 66 | 74 | 84 | 51 | 75 |
| Berkshire | 60 | 48 | 80 | 85 | 90 | 65 | 91 | 89 |
| Tamworth | 36 | 24 | 41 | 32 | 28 | 41 | 47 | 39 |
| Chester White | 40 | 30 | 37 | 30 | 33 | 27 | 34 | 31 |
| Any other breed | 34 | 45 | 15 | 44 | 24 | 47 | 31 | 20 |
| Bacon hogs | 40 | 24 | 23 | 33 | 43 | 21 | 18 | 134 |
| Carcasses | 34 | 24 | 17 | 33 | 38 | 20 | 18 | 134 |
| Butcher hogs | 23 | 15 | 11 | 12 | 10 | 16 | 15 | ..... |
| Carcasses, butcher hogs | 22 | 14 | 11 | 12 | 10 | 14 | 15 | ..... |
| Farmers' Sons' special | 6 | 2 | 7 | 4 | 6 | 2 | 3 | ..... |
| | 415 | 286 | 299 | 351 | 356 | 337 | 323 | 525 |
| SEED | 331 | 374 | 252 | 394 | 350 | 291 | 282 | 295 |
| POULTRY: | | | | | | | | |
| Fowls | 4,198 | 4,092 | 4,518 | 4,651 | 4,976 | 3,845 | 4,049 | 3,737 |
| Turkeys and water fowl | 346 | 396 | 462 | 455 | 449 | 367 | 441 | 372 |
| Pigeons | 558 | 663 | 872 | 913 | 923 | 547 | 671 | 726 |
| Pet stock | 46 | 18 | 25 | 89 | 49 | 40 | 34 | 37 |
| Exhibition pen | 20 | 31 | 59 | 69 | 78 | 65 | 92 | 65 |
| Selling class | 229 | 82 | ..... | ..... | ..... | ..... | ..... | ..... |
| Dressed Poultry | 185 | 208 | 166 | 136 | 179 | 186 | 277 | 273 |
| Laying pens | ..... | ..... | 11 | 10 | 12 | 8 | 13 | 15 |
| | 5,582 | 5,490 | 6,113 | 6,323 | 6,666 | 5,058 | 5,577 | 5,225 |
| JUDGING COMPETITION: | | | | | | | | |
| Regular | 195 | 124 | 145 | 140 | 60 | 198 | 192 | 180 |
| Inter-county teams | 54 | 63 | 60 | 63 | 30 | 69 | 66 | 78 |
| | 249 | 187 | 205 | 203 | 90 | 267 | 258 | 258 |

## REPORT OF THE EXECUTIVE

In presenting the report of the Thirty-ninth Provincial Winter Fair, your executive has much pleasure in reporting another successful event.

The Fair held in December, 1922, was a decided success in every way. The following comparison of entries for 1921 and 1922 show we had an increase in entries in most departments:

| | 1921 | 1922 |
|---|---|---|
| Horses | 336 | 276 |
| Beef Cattle | 367 | 387 |
| Dairy Cattle | 101 | 99 |
| Sheep | 837 | 947 |
| Swine | 323 | 525 |
| Seeds | 282 | 295 |
| Poultry | 5,577 | 5,225 |

The exhibit of horses was slightly lower than in 1921. This was particularly true of all fairs and exhibitions during the past year, and is, no doubt, accounted for by the general depression in the horse market which has existed for the past year or two. However, our stables were all filled, and it was probably fortunate we had a smaller entry than in former years, as it is becoming increasingly difficult to secure space for stabling horses.

In the Beef Cattle, Sheep and Swine Departments new high records were made. As you are all aware, it was necessary to crowd animals into every available corner, and to provide accommodation in a tent outside the building for the nurse cows, which were formerly accommodated within the building.

In the Seed Department an increase in entries was shown over 1921, and while in one or two years previous we had a larger number of entries, the addition of the class for commercial seeds, and the higher quality of the exhibits, made the exhibit of seeds decidedly the most attractive in the history of the fair.

In poultry there was a slight falling off. This was probably due to our fair following so closely after the Royal Winter Fair in Toronto, where a very large poultry show was held. Some of the exhibitors felt it would be rather hard on their birds to take them to two shows so close together. However, the falling off was not serious, the entries being as much as we could well accommodate.

Due to the fact that the three-for-a-dollar tickets were sold throughout the fair this year, instead of for a limited period previous to opening as in former years, our gate receipts showed a decrease, although the number of admissions show an increase over 1921. Up to Tuesday, our attendance was decidedly in advance over last year. On Tuesday, the weather turned cold and stormy, and continued so until the end of the fair, which, no doubt, reduced our attendance considerably over what it would otherwise have been.

Financially we are not in quite as good a position as we were a year ago. This is accounted for by the fact that we have approximately one thousand dollars less in gate receipts than in 1921, and the grants from live stock associations have been reduced somewhat, also we were obliged to expend a considerable

amount in providing temporary stalls and pens to accommodate the increased entries. At the end of our year it will be noted we had a balance on hand of $828. There are, however, some outstanding accounts to be paid which will practically exhaust this surplus.

The auction sale of beef cattle which was held for the first time in 1921 was repeated in 1922, and we are pleased to report that the exhibitors are well satisfied with the results.

An innovation at the 1922 fair was the holding of a boxing and wrestling contest between the students of the Ontario Agricultural College and Toronto University, on the Saturday evening of the fair. While the share of the proceeds which was paid to the students practically annulled any direct financial advantage, we believe it was well worth while. The building was crowded, largely with people from the city of Guelph, who in this way became interested in the fair earlier in the week than in previous years, and we believe we had a larger city attendance due to the staging of this event.

Another innovation was the sheep-shearing contest, which brought out a good crowd on Monday evening and was much appreciated by all who had the opportunity of witnessing it.

The need for increased accommodation, outlined in our report of last year, is still pressing and up to the present no concrete proposition is in sight which will solve this difficulty. We hope that now it has been demonstrated that a good show can be held in Guelph annually, following the Royal Winter Fair, that the outlook will be sufficiently settled for something tangible along these lines to be done at an early date.

In conclusion, we can possibly do no better than to repeat what we said in last year's report: "We feel that the Ontario Provincial Winter Fair may look forward to the future with confidence. It has been demonstrated that the producers of live stock, poultry and seed in this Province are willing to support the fair in increasing numbers, and we feel assured that any efforts which we can make to extend the classification or improve the accommodation will be fully appreciated by the general public. Let us make the 1923 fair better than ever, and the exhibitors will see that it is bigger than ever."

---

## FINANCIAL STATEMENT

Of the Ontario Provincial Winter Fair for the year ending January 31st, 1923.

RECEIPTS.

| | | |
|---|---|---|
| Cash on hand as per last report | | $310 84 |
| Grants— | | |
| Dominion Shorthorn Breeders', 1921 | $ 500 00 | |
| Dominion Department Agriculture, special prizes, 1921 | 1,251 00 | |
| Aberdeen-Angus Association, 1921 | 180 00 | |
| Canadian Jersey Cattle Club, 1921 | 50 00 | |
| Clydesdale Association, 1921 | 700 00 | |
| Hereford Breeders' Association, 1921 | 335 00 | |
| Ontario Sheep Breeders' Association, 1921 | 500 00 | |
| Canadian Jersey Cattle Club, 1922 | 50 00 | |
| Dominion Government, 1922 | 5,000 00 | |
| Dominion Shorthorn Breeders, 1922 | 500 00 | |
| Ontario Yorkshire Breeders, 1922 | 50 00 | |
| Ayrshire Breeders, 1922 | 200 00 | |
| Legislative Grant, 1922 | 17,000 00 | |
| Canadian Shire Horse, 1922 | 25 00 | |

| | | |
|---|---|---|
| Dominion Department Agriculture, special prizes, 1922 | $1,466 00 | |
| Clydesdale Association, 1922 | 325 00 | |
| Hereford Breeders' Association, 1922 | 270 00 | |
| Holstein Breeders' Association, 1922 | 720 00 | |
| Ontario Sheep Breeders' Association, 1922 | 400 00 | |
| Dominion Seed Grant, 1922 | 400 00 | |
| | | $29,922 00 |
| Entry Fees— | | |
| Horses, fees, $550.00; stalls, $215.00 | $765 00 | |
| Beef Cattle | 779 00 | |
| Dairy Cattle | 179 00 | |
| Sheep, wool and shearing | 706 25 | |
| Swine | 331 75 | |
| Seeds | 231 00 | |
| Judging | 154 00 | |
| Nurse Cow fees | 73 00 | |
| Live Poultry, $4,067.95; Dressed Poultry, $226.50 | 4,294 45 | |
| | | 7,513 45 |
| Gate receipts | | 5,880 00 |
| Concessions | | 676 60 |
| Sales— | | |
| Carcasses | $4,626 93 | |
| Cattle | 5,703 43 | |
| Dressed poultry | 2,354 26 | |
| Milk | 210 28 | |
| Seed | 935 55 | |
| Feed | 23 00 | |
| Catalogues | 161 40 | |
| Shavings | 10 50 | |
| Bags | 61 83 | |
| Tags | 22 50 | |
| Seed, 1921 | 12 50 | |
| | | 14,122 18 |
| Advertising— | | |
| Catalogue | $479 70 | |
| Premium list | 1,061 00 | |
| | | 1,540 70 |
| Refunds, 1921 | | 41 00 |
| Refunds, 1922 | | 398 47 |
| Rent of escalator and partitions | | 62 00 |
| Grant to staff | | 50 00 |
| Forfeit of prize money | | 55 00 |
| Fees for cattle sale | | 62 00 |
| Special prizes | | 21 00 |
| Poultry memberships, Guelph | | 51 00 |
| Special donations | | 5 00 |
| Sale of scales | | 14 85 |
| Cheques issued and cancelled | | 4 50 |
| Miscellaneous | | 8 71 |
| Total | | $60,739 30 |

## Expenditures.

| | | |
|---|---|---|
| Advertising | | $2,918 14 |
| Printing | | 3,260 08 |
| Prize Money— | | |
| Horses | $4,290 00 | |
| Beef cattle | 4,447 00 | |
| Dairy cattle | 1,696 00 | |
| Sheep | 3,877 00 | |
| Swine | 2,181 00 | |
| Live poultry | 4,724 00 | |
| Dressed poultry | 847 50 | |
| Laying pens | 87 00 | |
| Seeds | 1,254 00 | |
| Essays | 23 00 | |
| Judging | 465 00 | |
| | | 23,891 50 |

| | | |
|---|---|---|
| Fitting building | | $990 76 |
| Help— | | |
| Office | $1,017 00 | |
| Live stock | 1,052 85 | |
| Poultry | 944 00 | |
| Seeds | 135 05 | |
| Carcass | 131 20 | |
| Arena, stabling and management | 537 00 | |
| General | 912 35 | |
| | | 4,729 45 |
| Judges' services and expenses | | 2,009 00 |
| Judges' Clerks— | | |
| Poultry | $134 40 | |
| Live stock | 178 00 | |
| | | 312 40 |
| Sales— | | |
| Poultry, 1921 | $31 00 | |
| Dressed poultry | 2,354 26 | |
| Beef cattle | 5,703 35 | |
| Milk | 210 28 | |
| Carcass | 4,625 48 | |
| Seeds | 981 35 | |
| | | 13,905 72 |
| Directors' expenses | | 1,611 65 |
| Light and heat | | 1,221 49 |
| Block and dairy test | | 405 45 |
| Bedding | | 669 47 |
| Supplies— | | |
| Tan bark, $79.54; freight, $66.00; cartage, $35.00 | $180 54 | |
| Lumber | 253 16 | |
| Seed bags | 120 35 | |
| Feed | 170 68 | |
| Office stationery, etc | 78 14 | |
| Hardware | 116 74 | |
| Plumbing | 84 45 | |
| Tags | 30 25 | |
| Dip solution | 8 25 | |
| | | 1,042 56 |
| Prize ribbons | | 781 47 |
| Purchase of escalator | | 125 00 |
| Refund sale of catalogues | | 20 13 |
| O. A. C. share of boxing gate | | 593 19 |
| Orchestra | | 175 00 |
| Telegraph and telephone | | 56 68 |
| Board and railway fare, office staff | | 226 78 |
| Express and freight charges | | 106 04 |
| Livery service | | 20 25 |
| Ontario poultry memberships | | 440 00 |
| Insurance | | 160 00 |
| Cups and engraving | | 28 25 |
| Exchange, collections, etc | | 23 94 |
| Membership, E.C.L.S.U | | 25 00 |
| Subscriptions | | 13 50 |
| Taxes | | 13 91 |
| Audit | | 15 00 |
| Wreaths | | 10 00 |
| Refund stall fees | | 6 00 |
| Returned cheques | | 9 00 |
| Sundries | | 5 35 |
| Printing cheques | | 35 00 |
| Adjustments | | 15 07 |
| Legal advice | | 8 67 |
| Renting marquees | | 30 00 |
| Cash on hand | | 828 40 |
| Total | | $60,739 30 |

W. J. W. Lennox, *President.* J. E. Rettie, *Secretary-Treasurer.*

# STALLION ENROLMENT

SUMMARY OF BREEDS OF STALLIONS ENROLLED FOR THE YEARS 1913-1922.

(Report of enrolment by Counties will be found in the Stallion Enrolment Report.)

| Year | Clydesdale | Percheron | Shire | Belgian Draft | French Canadian | Suffolk | Standard Bred | Thoroughbred | Hackney | French Coach | German Coach | Ponies, Morgans and Hunter | Grades | Total Number Horses Enrolled |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1913 | 1,179 | 236 | 69 | 17 | 1 | .... | 156 | 31 | 59 | 7 | 6 | 6 | 993 | 2,760 |
| 1914 | 1,313 | 308 | 73 | 21 | 4 | .... | 232 | 43 | 72 | 5 | 7 | 5 | 1,118 | 3,201 |
| 1915 | 1,331 | 328 | 70 | 22 | 4 | .... | 257 | 46 | 77 | 7 | 6 | 7 | 1,022 | 3,177 |
| 1916 | 1,125 | 320 | 47 | 15 | 5 | 4 | 270 | 36 | 63 | 7 | 7 | 6 | 826 | 2,731 |
| 1917 | 1,038 | 299 | 42 | 19 | 4 | 3 | 280 | 31 | 60 | 6 | 7 | 4 | 640 | 2,433 |
| 1918 | 885 | 262 | 33 | 11 | 7 | 3 | 248 | 25 | 49 | 3 | 5 | 4 | 458 | 1,993 |
| 1919 | 976 | 326 | 32 | 21 | 6 | 3 | 286 | 19 | 47 | 2 | 6 | 5 | ..... | 1,729 |
| 1920 | 930 | 353 | 32 | 22 | 11 | 4 | 240 | 16 | 36 | 2 | 8 | 5 | ..... | 1,659 |
| 1921 | 845 | 347 | 23 | 26 | 9 | 2 | 200 | 14 | 34 | 1 | 7 | 3 | ..... | 1,511 |
| 1922 | 770 | 368 | 20 | 25 | 8 | 2 | 193 | 18 | 35 | 0 | 4 | 4 | ..... | 1,447 |

# CO-OPERATIVE CAR SHIPMENTS

CO-OPERATIVE SHIPMENTS OF LIVE STOCK.

Below are given the shipments for the years 1908 to 1922 inclusive, and that for 1922 in detail:—

NUMBER IN EACH SHIPMENT.

| Year | Horses | Cattle | Sheep | Swine | Total |
|---|---|---|---|---|---|
| 1908 | 22 | 74 | 14 | 15 | 125 |
| 1909 | 25 | 70 | 84 | 4 | 183 |
| 1910 | 39 | 51 | 36 | 7 | 133 |
| 1911 | 58 | 51 | 51 | 18 | 178 |
| 1912 | 51 | 45 | 24 | 20 | 140 |
| 1913 | 47 | 71 | 107 | 21 | 246 |
| 1914 | 49 | 97 | 34 | 20 | 200 |
| 1915 | 28 | 104 | 76 | 8 | 216 |
| 1916 | 59 | 185 | 100 | 22 | 366 |
| 1917 | 70 | 269 | 196 | 15 | 550 |
| 1918 | 67 | 250 | 180 | 4 | 501 |
| 1919 | 24 | 154 | 154 | 4 | 336 |
| 1920 | 18 | 110 | 37 | 6 | 171 |
| 1921 | 1 | 37 | 19 | 5 | 62 |
| 1922 | 3 | 18 | 6 | 21 | 48 |

DETAILS OF CO-OPERATIVE SHIPMENTS FOR 1922.

| Stock | March | June | Total | |
|---|---|---|---|---|
| Horses— | | | | |
| Clydesdales | ..... | 3 | 3 | 3 |
| Cattle— | | | | |
| Shorthorn | 7 | 4 | 11 | |
| Aberdeen Angus | 1 | 1 | 2 | |
| Holstein | 3 | ..... | 3 | |
| Ayrshire | 2 | ..... | 2 | 18 |
| Sheep— | | | | |
| Southdown | 6 | ..... | 6 | 6 |
| Swine— | | | | |
| Yorkshire | 9 | 7 | 16 | |
| Berkshire | ..... | 5 | 5 | 21 |
| | 28 | 20 | | 48 |
| Number of Cars | 1 | 1 | | 2 |

## LIST OF POULTRY ASSOCIATIONS.

| *Name of Association.* | *Secretary.* |
|---|---|
| Aurora Poultry Association | H. I. Watts, Aurora. |
| Aylmer Poultry Association | Fred. D. King, Aylmer. |
| Barrie Poultry Association | A. Hutchinson, Barrie. |
| Beamsville Poultry Association | J. A. Sinclair, Beamsville. |
| Belleville Poultry Association | A. S. Large, Belleville. |
| Border Cities Poultry Association | J. A. Shrum, Windsor. |
| Bradford and West Gwillimbury Poultry Association | T. E. Bell, Bradford. |
| Brampton and Peel County Poultry Association | E. Gregory, Brampton. |
| Brantford and Brant County Poultry Association | A. A. Freeborn, Brantford. |
| Brockville Poultry Association | G. Hall, Brockville. |
| Caledonia Poultry Association | H. H. Berscht, Caledonia. |
| Chatham Poultry Association | A. H. Black, Chatham. |
| Collingwood Poultry Association | J. T. Schultz, Collingwood. |
| Dundas and North Wentworth Poultry Association | R. B. Inksetter, Dundas. |
| East York Poultry Association | S. Foster, East Toronto. |
| Elgin Poultry Association | John Farley, St. Thomas. |
| Fort Frances Poultry Association | Wm. Bartley, Fort Frances. |
| Galt Poultry Association | L. Hinrich, Galt. |
| Guelph Poultry Association | Thos. Simpson, Guelph. |
| Hamilton and Wentworth Poultry Association | H. G. Pearson, Hamilton. |
| Hanover Poultry Association | Wm. H. Fisher, Hanover. |
| Ingersoll and South Oxford Poultry Association | E. H. Albrough, Ingersoll. |
| Kenora Poultry Association | R. Veitch, Kenora. |
| Kimberley Poultry Association | R. W. Lawrence, Kimberley. |
| Kingston Poultry Association | Wm. J. Arniel, Kingston. |
| Kitchener Poultry Association | J. Gordon Steiss, Kitchener. |
| Lambton County Poultry Association | Thos. Rose, Petrolia. |
| Leamington and Essex County Poultry Association | E. Walling, Leamington. |
| London Poultry Association | H. Layng, London. |
| Midland Poultry Association | W. H. Thornton, Midland. |
| Milton Poultry Association | M. A. Sinclair, Milton. |
| Mitchell and Perth County Poultry Association | C. Woodger, Mitchell. |
| Mount Forest Poultry Association | J. T. Allen, Mount Forest. |
| Napanee Poultry Association | E. W. Metcalf, Napanee. |
| New Ontario Poultry Association | E. H. Roskelly, Sault Ste. Marie. |
| Nickel Belt Poultry Association | D. J. Robicheau, Sudbury. |
| Norfolk Poultry Association | J. F. Laplant, Simcoe. |
| North Bay Poultry Association | W. C. Brimley, North Bay. |
| Northern Ontario Poultry Association | H. W. Tuck, Fort William. |
| North Lanark Poultry Association | A. C. Bond, Almonte, Ont. |
| North Renfrew Poultry Association | W. Buttars, Pembroke. |
| North Toronto Poultry Association | W. M. Kent, North Toronto. |
| North Wellington Poultry Association | J. A. Farrell, Arthur. |
| North York Poultry Association | G. A. Morning, Newmarket. |

| | |
|---|---|
| Northumberland and Durham Poultry Association | J. H. Magill, Port Hope. |
| Oakville Poultry Association | B. Galley, Oakville. |
| Oakwood Poultry Association | W. A. Scott, Newtonbrook. |
| Oshawa Poultry Association | H. J. Carey, Oshawa. |
| Ottawa Poultry Association | W. A. Rush, Ottawa. |
| Owen Sound Poultry Association | C. Vanwyck, Owen Sound. |
| Palmerston Poultry Association | W. E. C. Jones, Palmerston. |
| Paris Poultry Association | Geo. Leishman, Paris. |
| Parry Sound Poultry Association | Mrs. R. G. Harper, Sundridge. |
| Peterboro Poultry Association | W. J. C. Nesbitt, Peterboro. |
| Power City Poultry Association | H. A. Sewell, Niagara Falls. |
| Prince Edward County Poultry Association | Geo. R. Moore, Picton. |
| Renfrew Poultry Association | M. H. Winter, Renfrew. |
| Russell County Poultry Association | R. M. Warner, Russell. |
| Sarnia Poultry Association | G. W. Stephenson, Sarnia. |
| Smith's Falls Poultry Association | G. Gallipeau, Smith's Falls. |
| St. Catharines' Poultry Association | J. M. Cameron, St. Catharines. |
| Stratford Poultry Association | J. E. Bowling, Stratford. |
| Tavistock Poultry Association | S. Zehr, Tavistock. |
| Temiskaming Poultry Association | Levi Soper, Englehart. |
| Tilbury Poultry Association | W. J. Scharp, Tilbury. |
| Tillsonburg Poultry Association | Wm. Cadman, Tillsonburg. |
| Walkerton Poultry Association | H. H. Damm, Walkerton. |
| Wallaceburg Poultry Association | F. Hickling, Wallaceburg. |
| Waterdown Poultry Association | C. S. Burns, Waterdown. |
| Waterloo Poultry Association | D. Cressman, Waterloo. |
| West Elgin Poultry Association | C. C. Robinson, West Lorne. |
| Wiarton Poultry Association | O. S. Smith, Wiarton. |
| Woodstock Poultry Association | Leo. Matthew, Woodstock. |

## ORDER-IN-COUNCIL RELATING TO LOCAL POULTRY ASSOCIATIONS

### Copy of an Order-in-Council, approved by His Honour the Lieutenant-Governor, dated the 28th day of October, A.D. 1921.

Upon the recommendation of the Honourable the Minister of Agriculture, the Committee of Council advise that the following Regulations governing the payment of grants to local poultry associations be approved by your Honour:

(1) Any local poultry association entitled to a grant in the current fiscal year shall be regarded as a recognized association, and shall be continued so long as it complies with the regulations providing for the conduct of recognized poultry associations.

(2) Subject to the conditions hereinafter set forth, a local poultry association may be organized in the districts, and in the manner prescribed, and may become a recognized poultry association upon application to the Minister of Agriculture, approved by the Ontario Poultry Confederation, and upon being recognized shall be entitled to such assistance and such grants out of the funds voted by the Legislature as may be provided.

(3) No local poultry association shall be approved by the Ontario Poultry Confederation or recognized by the Minister of Agriculture until it has a paid-up membership of sixty bona-fide poultry keepers not members of any other poultry association.

(4) Not more than one association shall be recognized in any city, with the exception of cities with a population of 200,000 or more, and not more than one poultry association shall be recognized in any electoral district unless such district includes a city under 200,000, when an additional association may be recognized in such city.

(5) Recognition of any poultry association may be cancelled upon the recommendation of the Ontario Poultry Confederation for non-compliance with the regulations during any calendar year, and recognition of any local poultry association shall be cancelled upon non-compliance with the regulations for two consecutive years.

(6) Application for recognition must be made on a form to be supplied to the Minister of Agriculture by the Ontario Poultry Confederation through the director of the Live Stock Branch, and such application shall include a copy of the constitution of the association, the minutes of the organization meeting, and a list of the officers and directors.

(7) Local poultry associations shall receive annually, on recommendation of the Minister of Agriculture, a grant not to exceed $50, and such other assistance as may be approved by the Minister of Agriculture.

(8) The grant shall only be paid upon receipt of an annual report made out in such manner as may be required by the Minister of Agriculture.

(9) The Minister of Agriculture may make such regulations as may be required for the better carrying out of this Order-in-Council.

## THE ONTARIO HORSE BREEDERS' ASSOCIATION

The Annual Meeting was held at Hotel Carls-Rite, Toronto, on February 8th, 1923, the President, John A. Boag, Esq., in the chair.

The minutes of the last annual meeting having been read by the secretary, it was moved by Peter Christie and seconded by W. L. Mossip, that the minutes of the last annual meeting as read be adopted. Carried.

The financial statement having been read by the secretary, it was moved by Mr. Gardhouse and seconded by Mr. Scott, that the financial statement as read be received and adopted. Carried.

### Directors.

*Canadian Clydesdale Association.*

W. L. Mossip, St. Mary's.
J. M. McCallum, Shakespeare.
Dr. T. H. Hassard, Toronto.
M. J. Duff, Myrtle.
F. Richardson, Columbus.
Jas. Torrance, Markham.
W. F. Batty, Brooklin.
Jas. Brandon, Forest.
Thos. Rody, Toronto.
Wm. Graham, Claremont.
Peter Christie, Manchester.
J. A. Boag, Queensville.
W. Scott, Sutton West.
E. T. Stephens, Richmond Hill.

*Canadian Shire Association.*

John Gardhouse, Weston.
Amos Agar, Nashville.

*Canadian Percheron Association.*

E. C. H. Tisdale, Beaverton.
W. G. Hill, Queensville.
Lester Davies, Todmorden.

*Canadian Belgian Draft Association.*

C. W. Gurney, Paris.
Dr. F. C. Grenside, Guelph.

*Canadian Standard-Bred Association.*

O. B. Shepherd, Toronto.
Geo. Pepper, Toronto.

*Canadian Thoroughbred Association.*

J. J. Dixon, Toronto.
Col. Wm. Hendrie, Hamilton.

*Canadian Pony Society.*

Dr. W. J. R. Fowler, Guelph.
J. M. Gardhouse, Weston.

*Canadian Hackney Horse Society.*

Percy Boag, Queensville.
H. A. Mason, Scarboro.

### Representatives to Fair Boards.

*Canadian National Exhibition:*—John A. Boag, Queensville.

*Western Fair, London:*—James Brandon, Forest; W. L. Mossip, St. Mary's.

*Central Canada Exhibition:*—Hon. Wm. Smith, Columbus; Adam Scarf, Cumming's Bridge.

*Ottawa Winter Fair:*—Adam Scarf, Cumming's Bridge; Hon. Wm. Smith, Columbus; Capt. H. N. Bate, Ottawa; L. L. Cook, Ottawa.

*Ontario Provincial Winter Fair:*—John A. Boag, Queensville; Peter Christie, Manchester; T. H. Hassard, Toronto; T. G. Paterson, Agincourt.

*Royal Agricultural Winter Fair:*—John A. Boag, Queensville; Wm. Graham, Claremont; Peter Christie, Manchester.

*Eastern Canada Live Stock Union:*—Hon. Wm. Smith, Columbus; John A. Boag, Queensville; W. L. Scott, Sutton West.

## FINANCIAL STATEMENT.

### Receipts.

| | |
|---|---|
| Cash on hand as per last report | $654 01 |
| Legislative grant | 500 00 |
| | $1,154 01 |

### Expenditures.

| | |
|---|---|
| Directors' expenses | $451 55 |
| Expenses *re* Chicago Exhibition | 214 71 |
| Membership Eastern Canada Live Stock Union | 25 00 |
| Printing annual meeting notices | 15 00 |
| Reporting annual meeting | 15 00 |
| Rental of room annual meeting | 10 00 |
| Sundry expenses | 6 80 |
| Audit fee | 3 00 |
| Revenue stamps omitted from cheque | 12 |
| Cash on hand | 412 83 |
| | $1,154 01 |

(Signed) John A. Boag,
*President.*

(Signed) J. E. Rettie,
*Treasurer.*

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## PRESIDENT'S ADDRESS

John A. Boag, Queensville.

In dealing with matters affecting the horse-breeding industry, while conditions have not yet returned to entirely normal we may view the past year, I think, with considerable satisfaction. Prices for horses have not dropped since the close of the war to anything like the extent that prices have for other classes of live stock. Of course it is quite true that they did not rise during the war in proportion. While this condition caused severe depression for a time, it may be taken as an indication that the horse business is less liable to violent ups and downs than the raising of other live stock.

The approach to normal conditions in the general business situation has had a steadying and beneficial effect on the horse market. Lumber companies, paper companies and those requiring horses for various lines of work are in a more favourable condition. It is much easier for their management to estimate the amount of product it would be wise for them to manufacture and thus easier for them to estimate the number of horses and amount of equipment which they should purchase. This improved condition has been reflected in the activity of our sales stables in the larger cities, and the effect it has had upon breeding through the country has been good.

The importation of breeding animals from the Old Country has been resumed (on a small scale it is true) by several of our regular importers.

One of the matters which has retarded the freedom of movement of horses and assisted in keeping the prices depressed, has been the very high cost of transportation. In the summer of 1920 this Association assumed the initiative in bringing before the Board of Management of the different railways and the Board of Railway Commissioners the very serious detrimental effect these high transportation charges were having on the live stock industry in general.

Resulting from the steps which our Association initiated, the matter was taken up by a large committee and these efforts directed through the channel

of the Eastern Canada Live Stock Union. Assistance in employing counsel was given by the Ontario Department of Agriculture. These efforts resulted in the summer of 1921 in substantial reductions being made in the freight rates on all classes of live stock, excepting horses.

It seems to be one of those instances of the irony of fate, where we are able to help others, but unable to help ourselves. Representation has been made from time to time by your Board of Directors to the Eastern Canada Live Stock Union calling attention to this omission, and pointing out to them that, in fairness to the horse breeders, this freight reduction on live stock should apply to horses also. Up to the present, we have not received any intimation on which we can base hopes that this inequality is to be remedied.

We believe that the time has arrived when horsemen should get together. If they cannot secure equitable freight rates for horses through the same channel as secured those for other classes of live stock, then, we should take steps to interview the management of the different railways and the Board of Railway Commissioners, ourselves, at an early date.

I hope this matter will receive your earnest and careful consideration, and that some step will be taken to bring this matter to the attention of the proper authorities in the way in which it should.

During the past year, the industry received considerable assistance from the Dominion Government in the way of assisting Horse Breeders' Clubs. There are some provisions in the rules covering the conduct of these clubs, that appear to make it difficult to apply to Ontario conditions. It would be well to have this matter thoroughly discussed, and, if the meeting thinks wise, make recommendation for revision of these rules to the Minister of Agriculture.

The Provincial Department of Agriculture has assisted the industry in the way of paying premiums to the owners of high class stallions throughout the Provinces. We are very glad to see this action on the part of the Department, and believe that it is having a beneficial effect. It is possible that it may be wise to consider taking some steps to have the amount of premium paid based more on the quality of the offspring and less upon the conformation of the stallion himself and number of offspring. If any recommendations looking towards this end can be made by us it should be done.

At the time of our annual meeting last year, it was announced that the Department was willing to assist in making an exhibit of a Provincial nature at the International Live Stock Exposition at Chicago. Through your Executive Committee a number of horses were selected, and, in co-operation with the Department, 21 Clydesdales were recently exhibited there. We are pleased to report that this exhibit made a most creditable showing, 18 out of the 21 animals having received prizes; among them, the Reserve Championship Stallion and also the Reserve Championship Mare.

There is another matter which is possibly worthy of our consideration. During the past year there has been held for the first time the Royal Winter Fair. Anyone who attended the Fair could not help but be impressed with the very large part which horses played in the attractiveness and success of it. Considering the importance of horses to this Fair, it would seem only reasonable that the horse breeding industry should be represented on the Executive of the Association. A recommendation to this effect, we believe, should be passed at this meeting and forwarded to the Royal Winter Fair.

I trust that the several matters outlined will receive your earnest consideration.

## A WORD ON THE THOROUGHBRED

DR. GRENSIDE: I was wondering to-night how much educational work the horse breeders are doing in this Province. This Association is called the Ontario Horse Breeders' Association. The exhibitions which you support are supposed to be of an educational character and there is no doubt they do a great deal of good in that respect, but I do not think they do as much as might be done and I think something should be done in the matter of publicity of another character. I think the newspapers, agricultural and daily, might be used and articles should be published from time to time giving the latest news in connection with horsemen and horse breeders.

Very little attention and encouragement is given to the thoroughbred horse. I have always been a strong admirer of the thoroughbred horse. The reason the thoroughbred has not been used more on the common mares of the country is that the thoroughbred is not properly understood. Forty years ago I advocated the use of the thoroughbred horses. At that time I was connected with the Agricultural College, and I was more or less laughed at, but the breeders of this Province have been suffering ever since because they did not adopt my suggestion. When the war occurred we heard complaints all over the country that the Government were going to the other side to buy horses. Why did they do so? Simply because they could not get them quickly enough in this country. It was not because they were against buying the Ontario horses. If they wanted cavalry horses and riding horses they found they were extremely scarce on this side of the line. I suppose most of you remember the evening performances at the Royal Winter Fair; the thoroughbred was very attractive there in the show-ring; they were the most attractive class at the fair and these horses were got, in nine cases out of ten, through breeding to a thoroughbred sire. What made the reputation of Ontario as a horse breeding country on the other side of the line? It was the thoroughbred horse. People are apt to think when you talk about a thoroughbred sire that you are advocating the breeding of thoroughbred horses. Thoroughbred horses should be bred to half-bred mares of sufficient size and substance, and then you will get something that is not only good for hunting purposes, for which there is a great demand at the present time, but something that will always be saleable. People do not want to get away from the horse. They have found the motor vehicle very convenient for many purposes, but they also want to ride. Riding is more fashionable to-day than ever before. More horses are being used for that purpose than ever before in this country and the demand is going to increase. First, you want the proper mare. We do not want the Clyde or the Shire or the Percheron or the Suffolk, although I have seen the Suffolk crossed with a thoroughbred very successfully, especially where the lighter mares of that breed were selected that have smooth legs. In addition to that the thoroughbred can be crossed with the coach horse, the hackney or the roadster that will run from 1,100 to 1,250 pounds. I do not mean that a horse of that kind will supersede the draft horses, but there are many purposes on the farm for which he will be better suited than the heavy horse. I do not believe in breeding horses for one thing only. If you get a horse that is not quite up to the mark for saddle purposes he will be a useful general purpose horse on the farm. The mistake made by farmers was that if they had a little weedy mare, whether sound or not, they would breed it to a thoroughbred horse, and very often they got weeds, and unsound weeds at that.

If some education was done along this line I am satisfied that good results would follow. The horses that went from Ontario to Boston and New York and that made a reputation in these cities for Canadian horses, were from thoroughbred stallions. Of course, the farmers do not get the same price the dealers receive for these horses, because the dealer spends considerable money in training and conditioning these horses. You hear of a dealer receiving a thousand dollars for a horse and you will say, "We cannot get those prices." If you trained the horse and educated him and bitted him as the dealers do, you would receive the high price, but if you sell your horses green to the dealer you have to take a lesser price. I am satisfied that if we would use such sires as the Jockey Club imported it would be a great benefit to the Province. They are a good lot of horses, and by using horses of that class we could build up the reputation that we have lost to a large extent. During the Winter Fair I met dozens of men who said to me, "Where can I get some half-bred horses?" One gentleman who came from Pittsburg said he would take a carload if he could get them; he said he had scoured Virginia and could not get any, and I could not tell him where he could buy them because there are none in the country as far as I know. Dealers tell me it is almost impossible to get that class of horse. I can remember in the early days when Woodstock, Brantford, Tillsonburg and London had the reputation of being horse centres. Why? Because there were thoroughbreds in those districts, and the farmers at that time had sense enough to use them, and they made a reputation for the district.

MR. PEPPER: The reason the Racing Association went out this year and bought ten horses for breeding purposes was because the Federal Government bonused five of these horses, and I understand they bred over 100 mares apiece, and I think it is a very strong move in the right direction. When we were breeding the right horses in this country we were never short of buyers, they were here every day and were all over the country. I am sure this Association would be doing the right thing in following the advice we have been giving.

C. M. MACRAE: It was really Col. Hendrie who stood behind the bringing out of these horses for the purpose of breeding remounts. They were brought out with the idea of producing saddle horses, hunters, delivery horses and horses of that kind. When the war broke out there were about three million horses in Canada; Ontario, the leading province, had a little over 900,000 horses, and to-day Saskatchewan is the leading Province and is estimated to have 1,100,000 horses; Alberta follows next with somewhere around 800,000 horses and Ontario is third with 700,000 horses. Of 4,200 horses that came into St. Boniface Stock Yard at Winnipeg in 1922, 3,260 were pulled through to Ontario and Quebec and the Maritime Provinces and Prince Edward Island. There was a carload each month shipped to Prince Edward Island. I would have dropped in a faint fifteen years ago if I thought Prince Edward Island would ever import horses. Two carloads of breeding mares were shipped to Ontario to be sold to farmers for breeding purposes. A few years ago you were sending from Ontario from 20 to 25 carloads west, that is from one district, but now the tables are turned and the horses are coming this way. In the past there was a good sale for all the saddle horses you could produce in the United States. A man from Philadelphia the other day asked me where he could secure good bang-up green hunters, and he told me there were six riding classes in Philadelphia with 1,200 members, and it was not an uncommon thing to see, on Saturday, from 600 to 700 riders of the various clubs out riding. He said the same thing holds good in other cities of the United States, and I can state that the same thing holds good in Ontario. We used to laugh at

the fellow with the wide breeches in the West. The other day there were thirty-seven polo ponies shipped to New York from Calgary for $18,000 hard cash. The same shipper is training another fifty to go to Los Angeles. Nineteen went to North Carolina at over $500 a head. If you breed what the market wants you will be able to sell your horses. We have been pestered the last few years to sell thousands of horses for which there is no market because these horses have no breed behind them. If they were all killed off the country would be better without them. I am afraid that the actual horsemen have not been looking at the market, and I want to say that as strongly as I can. If you had the horses we could sell them. We can sell saddle horses and hunters, but we cannot sell the other truck, because the market that would take them has not any money to pay for them. They talk about the Cossacks coming out here to buy horses. I have not seen any of them yet. Last year Greece said they would buy 6,000 horses, and that they would pay half cash, but they wanted us to lay them down in Greece. They really wanted us to give them to them for nothing. Before this year is out we are going to import from the west many hundreds of horses that are required on our farms. There is a scarcity of young horses three, four and five years old on our farms. That should not be the case, and it is an indication that the horse industry is not in a healthy state.

## ASSISTING THE HORSE INDUSTRY IN ONTARIO

At the close of a long and interesting discussion on stallion route cards, the difficulty of collecting fees from unscrupulous owners of mares, and the need of a fuller co-operative policy on the part of horse breeders, the following committee was appointed to assist the President in devising a policy to protect these various interests: The President, Col. Hendrie, Messrs. Hill, Scott, Hassard, McCallum, Pepper and Coulter.

## REPRESENTATION AT THE ROYAL WINTER SHOW

THE CHAIRMAN: There are no horsemen on the executive of the Royal Agricultural Winter Show and I think a horseman should be elected on that executive.

MR. PEPPER: The Royal Winter Fair is supposed to have four stock men; it has three sheep men and one dairy produce man. The horses represent nearly three-quarters of the stock in Canada, and they are the biggest part of the show as far as drawing money is concerned, and now that there is a change and the stock men are going to take over the show and finance it and run it, it might be made a condition that horses should be represented. If the horsemen do not look after their own interest they will not get very far. I think this Board should authorize the Secretary and President to give notice that they will move for a change in the by-laws so that they will provide that the horsemen should have a member on the executive. The last show was a feeler, and it surprised everybody, and I think it is only proper that the horsemen should be represented on the executive.

THE CHAIRMAN: The Secretary will give due notice.

The meeting then adjourned.

# CANADIAN SWINE BREEDERS' ASSOCIATION

The Annual Meeting of the Canadian Swine Breeders' Association was held at the Carls-Rite Hotel, Toronto, Ontario, on February 13th, 1923.

The President, M. Ste. Marie, St. Ann de la Pocatiere, Que., occupied the Chair.

## OFFICERS.

*President*.....J. E. Brethour, Burford.
*Vice-President*.....Wm. Gilbert, Stony Plain, Alta.
*Secretary-Treasurer*.....J. E. Rettie, Toronto.

### Executive Committee.

M. Ste. Marie, St. Anne de la Pocatiere, Que.
Phillip Leech, Baring, Sask.
J. E. Brethour.
Wm. Gilbert.
J. E. Rettie.

### Directors.

Wm. Gilbert.
W. H. Higginson, Sardis, B.C.
W. H. English, Harding, Man.
Peter Brodie, Little York, P.E.I.
Phillip Leech.
Frank Byrne, Charlesbourg, Que.
M. Ste. Marie.
J. E. Brethour.
Cecil Stobbs, Wheatley.
G. A. Welstead, St. Catharines.

### Representatives to Record Board.

J. E. Brethour.
Cecil Stobbs.
G. A. Welstead.
J. E. Rettie.
Phillip Leech.
Wm. Gilbert.
M. Ste. Marie.
Frank Byrne.

### Representatives to Fair Boards.

*Central Canada Exhibition:*—W. McCullough, Ottawa; A. A. McMillan, Ottawa.
*Royal Agricultural Winter Fair:*—P. J. McEwen, Wyoming; M. Ste. Marie, St. Ann, Que., and The President.
*Eastern Canada Live Stock Union:*—J. E. Brethour, Burford; M. Ste. Marie, St. Ann, Que.; F. L. Fuller, Truro, N.S.
*Western Canada Live Stock Union:*—Philip Leech, Baring, Sask.

## REPORT OF THE DIRECTORS, 1922.

The number of registrations for the different Breeders of Swine during several years past is as follows:—

| | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|---|---|---|
| Yorkshires | 3,147 | 3,975 | 3,889 | 5,362 | 5,578 | 4,759 | 4,173 | 7,523 |
| Berkshires | 2,535 | 3,820 | 3,431 | 3,801 | 3,722 | 2,669 | 2,831 | 2,874 |
| Chester Whites | 1,555 | 1,629 | 1,583 | 1,905 | 1,877 | 1,594 | 1,439 | 1,177 |
| Tamworths | 675 | 942 | 742 | 748 | 727 | 485 | 676 | 1,493 |
| Poland Chinas | 595 | 946 | 824 | 784 | 1,009 | 733 | 721 | 686 |
| Duroc Jerseys | 1,337 | 2,312 | 2,102 | 2,512 | 2,325 | 2,096 | 2,309 | 1,495 |
| Hampshires | 117 | 168 | 130 | 179 | 258 | 211 | 338 | 621 |
| Large Black | .... | .... | .... | .... | .... | 43 | 62 | 86 |
| | 9,961 | 13,792 | 12,701 | 15,291 | 15,496 | 12,590 | 12,549 | 15,955 |

### Review for 1922.

It will be noted by the report that the registrations for 1922 are the highest in recent years. This reflects a greater volume of business being transacted by the Association, and also by its members, in any year since 1919.

The price for swine has been maintained very well during the year. This has, in turn, given raisers of swine for the market greater confidence, and they have been purchasing breeding stock in larger numbers. This is particularly true of those breeds which most nearly approach the bacon type as required for the British market.

The finanecs of the Association have improved considerably since 1919. It should be borne in mind, however, that out of the balance shown on hand on December 31st, there was a balance of approximately $1,500 due the Record Office and a considerable part of the cost of printing Volume 33 of the Swine Herd Book to be paid. If we continue the practice of using the greater part of our available surplus in making grants to Provincial Associations we will be able to increase them slightly this year. It might be well to consider whether it is the wisest thing to do with these funds, before any such action is taken.

The question of educational work in swine is progressing very favourably in all provinces from Quebec to Alberta. In the Province of Quebec, fifty swine clubs are now in operation. Last year the Quebec Swine Breeders' Association, in co-operation with the Industrial and Development Council of Meat Packers, the Quebec Department of Agriculture and the railways, conducted a demonstration train through the Province, from which 76 demonstrations and 275 lectures were delivered in connection with swine raising and marketing. A number of pure-bred boars of the bacon breeds and a number of grade sows of the bacon type were carried for sale on the train. 250 boars and 1,250 sows were sold.

In Manitoba there is in the neighbourhood of 200 Boys' and Girls' Pig Clubs. The Provincial Association has been assisting these clubs by giving prizes for car-load lots at the stockyards at Winnipeg. The Manitoba Department of Agriculture has assisted materially in the formation of these clubs. A feature which they have developed is in having demonstration teams, two members of a club who can outline the requirements of the British market as far as bacon and other pork products are concerned, and can give talks on the points of Wiltshire sides or bacon hogs in a manner that would do credit to a person much older and more experienced.

In Saskatchewan, the Provincial Department of Agriculture and the Swine Breeders' Association are co-operating in encouraging Boys' and Girls' Swine Clubs. A feature which has been developed in Saskatchewan with good results is one whereby a number of pure-bred boars are kept at the different stockyards. A farmer wishing to buy good grade sows is given assistance in purchasing these at the yards, and arrangements are made to have them bred to the boars referred to at a nominal charge, before being shipped to his farm. If he is not in a position to pay the full amount of the purchase price of his sow, he can secure one by paying half cash, and receive credit on the other half on time payments from the Provincial Department.

In Alberta, Boys' and Girls' Swine Clubs are assisted by the Provincial Department. Both Calgary and Edmonton Winter Fairs arrange for competitions for car-load lots at their fairs, and very liberal prizes are offered. Financial assistance is given to members of these swine clubs in the way of having credit extended to them by banks or rural credit associations. The matter is kept on a strictly business basis, with payment of interest at the rate of 6% having to be made. In this way many young swine raisers are encouraged.

In Ontario, the Provincial Department of Agriculture has co-operated with the Dominion Live Stock Branch in the formation of Boys' and Girls' Pig Feeding Clubs, and competitions for car lots are arranged for in the stockyards. At Toronto last fall nine car lots competed. These hogs averaged very well and were a credit to the boys and girls who fed them.

The educational courses given in 1921 were repeated in 1922. In addition to six larger courses held at the packing plants, 31 courses were held at various points in the province in connection with the regular short courses in agriculture conducted by the agricultural representatives. Another feature of the work this year was the loaning of boars by the Provincial Government to Bacon Hog Clubs which were properly organized. A high-class boar of one of the bacon breeds is provided free of charge, on condition that the animal be properly cared for and that the members arrange to compensate the caretaker for his time and feed.

In all the Provinces considerable assistance has been rendered by the Dominion Live Stock Branch. There are considerable variations in the means used to promote interest in swine raising in the different Provinces. No doubt this will always be the case, as conditions vary over such a large expanse of territory. It might, however, be well for us to consider the advisability of studying this matter and, where possible, have means taken to make the teaching more uniform.

## For the Future.

There are several matters which should receive our consideration at this meeting. The first question is grading hogs at public markets and abattoirs. We should consider how this matter has worked out up to the present, and if we have any suggestions to make to the Government which will improve conditions and make the results more apparent to the raiser of hogs we should be prepared to make them.

The second matter is the question of uniformity of judging at our larger fairs and exhibitions. At the present time the matter is entirely at the personal inclination of the judge, and we find decisions reversed at succeeding fairs, which is confusing to breeders and exhibitors. If it is possible for us to issue up-to-date score cards for the different breeds, we should take the necessary steps to do so.

The third matter which should be taken up and thoroughly discussed is that of instituting some system of testing swine for the production of bacon for our export markets which would provide fairly accurate indications of what we might expect from any particular mating.

The fourth matter is the administration of the Feeding Stuffs Act. It is important that feeding stuffs which are sold under a particular trade name, say for instance "Shorts", should have a very small variation as to its quality, no matter where purchased. Questions of this

nature in connection with this Act should be taken up and our views given to those responsible for administrating it.

In addition to these matters, there is the report of the committee appointed at the last Annual Meeting to investigate the standing of American records. The report of this committee will be presented at this meeting.

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## FINANCIAL STATEMENT, 1922.

### Receipts.

| | |
|---|---|
| Cash on hand as per last report | $12,616 60 |
| Registrations | 20,384 36 |
| Memberships | 4,264 00 |
| Interest | 324 10 |
| Sale of Books | 28 00 |
| | $37,617 06 |

### Expenditures.

| | | |
|---|---|---|
| Directors' Expenses, etc | | $2,304 70 |
| Record Office, salaries | | 5,654 52 |
| Printing Records and Notices | | 8,394 14 |
| Grants to Associations:— | | |
| Alberta Swine Breeders' Association, 1921 | $56 25 | |
| Manitoba Swine Breeders' Association, 1921 | 97 50 | |
| Saskatchewan Swine Breeders' Association, 1921 | 146 50 | |
| Alberta Prov. Swine Breeders' Association, 1921 | 56 25 | |
| Manitoba Swine Breeders' Association, 1922 | 177 00 | |
| Saskatchewan Swine Breeders' Association, 1922 | 301 00 | |
| Ontario Swine Breeders' Association, 1922 | 402 00 | |
| Alberta Swine Breeders' Association, 1922 | 132 00 | |
| Alberta Prov. Swine Breeders' Association, 1922 | 132 00 | |
| Quebec Swine Breeders' Association, 1922 | 348 00 | 1,848 50 |
| Educational Courses | | 187 60 |
| Photos | | 5 00 |
| Press | | 30 00 |
| Rental of room for meetings | | 19 50 |
| Office Expenses | | 40 00 |
| Postage | | 110 00 |
| Audit of Records | | 75 63 |
| Counting Ballots | | 4 00 |
| Reporting General Meeting | | 20 00 |
| Membership E.C.L.S.U. | | 25 00 |
| Audit | | 10 00 |
| Cash on Hand | | 18,888 47 |
| | | $37,617 06 |

M. Ste. Marie,
*President.*

J. E. Rettie,
*Treasurer*

The minutes of the previous meeting having been read by the Secretary, it was moved by Mr. Brodie, seconded by Mr. German, that the minutes as read be adopted. Carried.

The Financial Statement having been read by the Secretary, it was moved by Mr. Brethour, seconded by Mr. Dewar, that the Financial Statement as read be adopted. Carried.

Moved by Mr. Leech, seconded by Mr. Gilbert, "That the President and the Secretary-Treasurer be authorized to invest a sum not to exceed $5,000 of the balance at present on hand in approved bonds as a reserve fund, and that a grant be made to each of the Provincial Swine Breeders' Associations equal to $2 for each paid membership in these associations on December 31st, 1922, from the Province in which the association is situated." Carried.

## UNIFORMITY IN JUDGING AT FAIRS

MR. RETTIE: We have a letter from the Live Stock Commissioner with reference to judges at the larger fairs and exhibitions. It is to the effect that the Department is very anxious to see greater uniformity in the judging at the larger fairs and exhibitions. They have forwarded with the letter a resolution passed at the meeting of the Fair Managers held in Toronto at the time of the Royal Winter Fair. I will read that resolution:

RESOLUTION FROM THE REPORT TO THE MINISTER, OF THE SPECIAL FAIRS COMMITTEE, DEALING WITH THE QUESTION OF JUDGES AND JUDGING.

"There is need for greater care in the selection of live stock judges, and for more uniformity in their work. These difficulties may be lessened with the co-operation of the breed associations. We would recommend that each of the larger breed associations be asked to appoint a small special committee to compile a select list of qualified judges for their respective breeds, and that those so selected should be invited to attend the next Royal Winter Fair where they will be required to spend a stated time together studying the live stock exhibited, comparing ideas as to type, conformation, etc., and arriving at as nearly as possible a fixed standard of judging. Were this done each year with different men it would not be long before the breed associations would have a list of judges which they could confidently recommend to exhibition associations. We further consider it desirable that the breed committees prepare for each Province a list of prospective judges who might be given an opportunity of accompanying judges at exhibitions in their own Province, thus training them to qualify as judges for the smaller exhibitions and gradually working up to be principal judges at the large exhibitions. It is, in our opinion, very desirable that the Federal Government should continue its present policy of assisting the associations to secure judges for live stock and poultry, but that this assistance be confined to judges recommended in cases where a breed association has carried out the aforementioned plan. Should any exhibition association deem it advisable to take upon itself the responsibility of securing judges they should be permitted to do so on the understanding that Federal aid for such judges will be withheld."

That matter was considered by the Directors and, after giving it some discussion, they recommended the following resolution be passed here:

Moved by Mr. J. D. Brien, seconded by Mr. Dewar: "That in reference to the letter received from the Live Stock Commissioner, we wish to express our sympathy with the object sought, and to request each Provincial Swine Breeders' Association to submit to this body for transmission to the Department of Agriculture a list of approved judges, also prospective judges." Carried.

MR. GILBERT: I notice that at Ottawa they have been carrying on feeding competitions for the Eastern Provinces, the breeders supplying the pigs, the Dominion Government carrying on the work and giving the cost of production and the particulars to the farmers of the district. The hog business is growing in the west very rapidly, and is the salvation of our Province at the present time. I feel that if the Government could see fit to put that competition on at the Dominion Experimental Farms in the West the breeders would be pleased to supply the different breeds for the competition. In presenting this resolution, I would like as many breeders as possible to give their consideration to it, in the interest of the swine business of Alberta.

Moved by Mr. Gilbert, seconded by Mr. Brodie: "That the Dominion Government be requested to carry on experiments for the Western Provinces in the same way that they are for the East." Carried.

MR. FOLLETT: I am from Saskatchewan, but I do not understand what Mr. Gilbert is asking for; is it a kind of competition?

THE CHAIRMAN: No, it is a feeding station.

## BACON PRODUCTION TESTS

A. A. McMillan, C.E.F., Ottawa.

Last year preliminary bacon production tests were conducted at the Experimental Farm at Ottawa and Charlottetown Experimental Farm, P.E.I. These experiments were of a preliminary nature, and were started with the view of establishing some method of checking up pure breeds. We have established a pure breed status for commercial hogs, and it naturally follows that as grading continues and as purchasing according to grade quality becomes general, the various breeds will become popular or unpopular just in the way in which their progeny stand up or meets with the commercial standard, and that commercial standard is based on the ability of the carcass to meet the requirements of the trade not only in Canada but also in Great Britain. As we have established a standard for the commercial hog, something should be done to check up the pure-breds. I do not know that anybody has definitely decided how that should be done. In the preliminary work conducted last year, three breeds were represented, the Yorkshire, Tamworth and the Berkshire. Of the Yorkshires that were contributed all but one qualified for length of side, and of the Tamworths all but one, and of the Berkshires there was only one out of the six that had sufficient length. Of course it was a very limited number of hogs that were entered in the test, but length is one of the deciding factors. Sides were also scored for distribution of back fat, firmness of fat, proportion of lean to fat, proportion of side and lightness of shoulder and development of ham. We tried to have the hogs slaughtered when they were at the proper market weight, and if the breeders had an opportunity of being there to see the sides when they were cut up, they would have been able to study the good and bad points, and it would have contributed a lot of valuable information to them.

Whether that work should be continued at central points, or whether the farmers should be allowed to feed their own hogs under some sort of supervision, I am not prepared to say. Perhaps a combination of the two methods might be decided upon; but I think the time is now opportune for checking up our pure breeds. When stock is selling without any trouble is the time to get busy and do some checking up. We have been paying considerable attention to the fancy points of our breeds, and I do not say we should minimize that, but we have to pay a lot more attention to all the factors that are co-related to the production of A-1 market hogs.

A prominent breeder pointed out to me last spring one litter, and he said if he was going to select pigs to win at the fall fairs he would take them from that litter, but if he was going to take pigs to win in a bacon test he would take them from another litter. It did not take an expert to see that these sows were of different types; one litter was not as large as the other and was lacking in uniformity. The other sow had a large litter of uniform size, and she was tending to them properly. In visiting one of the leading colleges in the West and talking to the professor there, he told me that he had established a standard in his herd based entirely on the litters; that is, when he put hogs into his breeding herds, the litter from which these hogs were selected had to come up to certain standards, and he showed me five sows he was putting in from one litter of ten that were absolutely uniform in type. The point I want to make is that the standard for the pure bred in my opinion has got to be higher than the standard for the commercial hog, and we have to take note of the factors that are related to the production of the commercial hog, and it

has got to include sire and sow and the litter and some of the progeny. There is a lot of skepticism as to the ability of these bacon hogs to feed economically, and that prevails in spite of the fact that our experimental colleges have done a lot of work to show that the bacon hog will hold its own. There is nothing that will put the bacon hog on a sounder or saner position than to show that it will feed well. Every animal that is sold to-day is an advertisement for future business, and the breeders cannot afford to neglect checking up their herds. I think that is one of the points that should be gone into thoroughly by the committee. A lot of valuable work is done by the fairs in giving prizes for carcasses of hogs. Our prize list will have to be revised in that particular. My attention was called to a prize list at one leading fair where prizes were being offered for hogs not of the bacon type, and that is another matter that the special committee should go into.

MR. REEK: We have only had these experiments for one season, and it is not safe to draw definite conclusions from one year's experiments. The experiment that we conducted was planned definitely for our section of the country where we have special problems of our own in the south-western part of Ontario. We were trying to answer three questions: First, can the so-called thick, fat hog be improved and fed whereby it will make bacon? Second, can we take the bacon hog of the Yorkshire type into a corn country and feed it and make pork as cheaply as we can out of the thick hog? Third, if that was done would the Yorkshire hog produce bacon?

We had four pigs in a pen and we had all breeds. The pens were 30x60 ft. with plenty of shade. They were all fed alike except when we came to the finishing period. We kept a careful check of all the feed, and we weighed the pigs up at intervals. We were more interested in the way the pigs graded than what it cost to produce. When we thought the pigs were in marketing condition, we had them slaughtered, and a number of representative sides were sent to England to be graded and these were used as a guide for grading the balance. As the abattoir was not killing every week, one lot got too heavy. One Duroc breeder spent two weeks studying his pigs. He sent us a pen of very fine Duroc pigs, and we received word back that the sides were satisfactory for the London market. I am not prepared to say that there were very many Durocs in Essex and Kent that would do that, but they did not make as cheap gains as some of the Yorkshires. I think it would have been better if the sides had been scored in Toronto.

MR. REEK: I believe the aim of this experiment is to get a comparison of breeds, and it is a difficult matter to compare breeds whether of hogs, sheep or cattle, for the reason that there is so much more difference in strains than breeds, and there is a difference in the individual animals, and there is a difference in the feeders and the kind of feed that is used. In my opinion, it is going to be very difficult to decide as to what is the best breed of swine.

MR. DUNSMORE: I am the only representative from the Farm that has had any connection with this experiment. The test was conducted with the object of determining in so far as we were able which of the breeds were producing hogs which would suit the requirements of the bacon trade. The test was conducted under summer conditions in cabins, and they also had a small run of about 15 by 24 feet, and the cabins were the only shelter available for the pigs. The average age of the pigs was about two months, and the first were finished when about six months of age. One pen of Yorkshires and one of Berkshires were up to weight, to grade and to what we consider a desirable condition for bacon carcasses. They received in conjunction with the meal

ration an amount of skimmed milk, depending to some extent on the increase gains made by the hogs. The ration which we gave them at the commencement of the test was calculated to produce the maximum growth; when they had attained the desired growth, the feed was designed to finish the hogs as rapidly as possible, and during the last three weeks was the only time they received any corn. The ration included such feeds as shorts, middlings, a little bran and barley, 3% of oil meal and 5% of tankage. One of the breeds in particular during the rather inclement weather in the fall, did not stand up as well as the other two. There was also some constitutional disturbance among this pen which took away somewhat from the accuracy of the results.

The Experimental Farm at Ottawa is not in a position to handle any large number of pigs because it interferes with our other experimental work.

MR. GILBERT: In Alberta at the present time we have one of the greatest marketing conditions in the world with regard to poultry and eggs, and it has all been developed by the farmers sending three or four pullets to one station to have them fed and tested, and that has grown until they have developed into an egg-marketing plant. We have one of the greatest poultry plants in the Dominion at the present time, and we are shipping poultry by the carload. My idea was that a similar thing might be started in the hog business, and it would take care of itself. We do not want the Government to stand all the expense; we only want permission to start something for the swine industry.

MR. DUNSMORE: It would cost a large amount of money to conduct such an experiment, and it would involve a large amount of additional labour as far as we are concerned, and a lot of material such as cabins and hurdles and things of that nature.

MR. MCOUAT: I happen to have had some slight connection with this work during the past fall, particularly in scoring the carcasses after the hogs were slaughtered, and I also viewed the work of feeding which was carried on at the Central Experimental Farm, Ottawa, and it appears to me that the question comes down to this: As swine breeders you are trying to develop a type of hog generally that is going to bring the most money on the market, and you want to know whether your hogs are right. The object of the bacon production test was to get some information along this line. As far as the test itself was concerned, we are not in a position to draw any conclusion from it. Mr. Gilbert wants some information about the situation in the West, and I do not think that is a matter that can be decided at a meeting like this. It is too much in its initial stages. We have come to the conclusion that feeding is pretty nearly 50% of bacon production. We have to have the breed first and conformation, but you can spoil the best Yorkshire by feeding. You can make a thick hog out of it, but probably not as easily as you can out of some of the other breeds, but that is one of the problems which we cannot afford to neglect. Last year's test included economy. They want to find out not only what strain produced the best market hog but what strain produced it most economically. If you have a hog of poor constitution and lacking in vitality, that will show in the markets when it is slaughtered. It might be possible to allow the farmers to feed their own hogs, but some farmers are not in a position to do that. We might have a central station in the East and one in the West, and one of our field men could probably visit the different farms where the test was being made, and tattoo the hogs, take a note of the sow and the boar, and keep a check on the age of the hogs, when they were ready for the market, but the burden of responsibility will rest upon the farmer. I would like to see a real good committee appointed at this meeting, of men

who have been breeding hogs and who would have time to give this matter careful study and who would plan out a scheme that could be put into operation in the West as well as in the East. I think we need a standardized type, and in a period like the present when there is a good demand for hogs, the breeders have to be more careful as to the kind of stuff they are sending out.

Moved by Mr. Gilbert, seconded by Mr. Brien, "That this matter of selection of type be left to the committee appointed to deal with other matters, and that the said committee take the matter up with the Experimental Farms." Carried.

Mr. Rettie: A committee was appointed to consider pedigree. The Government and the different associations will recognize only one record for any breed of animal; and we feel it is not good business on our part to recognize more than one foreign record for any breed.

Mr. Brethour: Before you enter into a discussion of this matter I would like to introduce to the meeting Mr. Simpson of Chicago, who represents the National Association of Swine Breeders' Records. I believe our American friends are trying to follow the Canadians in the matter of records, and are trying to nationalize them. I think we should hear from Mr. Simpson with regard to the resolution that is before us.

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## THE QUESTION OF PEDIGREE

### Mr. Simpson, Chicago

I came here to speak about this particular point, and I will try and give you our standpoint on the matter. In the United States we have had a good deal of rivalry, not always friendly. About three years ago the National Association of Swine Records was organized. That is a body primarily to promote a better feeling and understanding between the breeders and the various swine records. The representatives in the organization are two men from each of the breeds—Poland, China, Duroc, Chester White, Tamworth, Berkshire and Yorkshire. We have found that when people rub shoulders, and forget the chip on their shoulder, they begin to find out how nearly alike they do think. One of the things we found out was that there was plenty of room in the United States for all breeds of swine. We do not think there is any necessity for the unfortunate breed rivalry that there has been in the past. We feel that we have got to get together, but it is a slow matter and it cannot be done in a month or a year, but we have done remarkably well at it during the past three years. We all realize that it is a good thing to have one record only. There is a great feeling of co-operation now between the different associations and they are working in close co-operation.

With regard to the proposition now in hand, you folks should recognize but one of our associations. It is going to be difficult to decide which one to recognize in this way: the two record associations are more or less geographically located in the United States. If a line were drawn through the United States on one side of the Mississippi River, the territory west of that line records one, and on the other side it is the American Association, and that is recognized in a friendly manner. And that line has been carried into Canada to a certain extent, and the majority of the breeders in the west will find their hogs are recorded in the association west of the Mississippi. If you decide on one of these associations and leave the other one out it will be more or less of a hardship on your people in either one locality. If you recognize the National it will be putting a hardship on the other breeders. The breeders in the United

States would feel that it was more or less of a slap in the face. I wonder if you people feel that it is of vital enough importance at this time to cut down the recognition that you extend to our association. Would not it be better to continue to recognize both these record associations which are working in close harmony with each other, and leave it to a matter of time for these people to get together. We think they are going to get together, and we do not believe a step of this kind would hasten their getting together. It is just the kind of thing that sets people on edge down there, and if anything, it would work a little the other way. I think you are right in your plan of centering on one association, it is the most sensible way, there is no doubt about that.

MR. RETTIE: In the past we have been accepting American Certificates from both records the American and the National, and we thought the time had come when we could afford to cut them down.

MR. BRETHOUR: As one who has been to some extent interested in this revision, I might say that it has been the desire of the committee to simmer down the various associations which we recognize. We look upon it as more or less a family quarrel, and we do not see that we are called upon to maintain that quarrel. I do not think we will be seriously breaking our rules in allowing this matter to continue for a time. I would not object to it, although I am not in favor of the principle. Possibly if we give them a little time they will get together. As far as the Chester White Association is concerned, I look on it in a different light; from the information we have secured the Washington Government will not recognize that association, and I do not think we should uphold an association that their own government has censured, and I think we are justified in making a change as to the Chester White Association.

Moved by Mr. Duke, seconded by Mr. Stobbs, "That both Duroc Jersey Associations be recognized by this Association, and that the balance of the report of the committee be adopted as read." Carried.

MR. RETTIE: The President has asked me to explain one other matter: At the present time there has been put on foot a scheme for allowing the elevators to sell screenings; it is a temporary arrangement. Mr. Stonehouse, one of the representatives on the advisory board, appeared before us and asked if we approved of the matter that we should forward a resolution to the seed commissioner approving of the principle of having screenings sold only when they come up to the standards which are laid down.

Another matter that was brought up was the question of the content of some of the mill feeds, particularly shorts and middlings. It is not felt that there should be any change in the standards already in existence, which would have the effect of increasing the percentage of fiber in these feeds. We have been asked to forward a resolution to the seed commissioner so as to strengthen their hands in that regard.

Moved by Mr. Brodie and seconded by Mr. Gilbert, "That the matter of screenings being sold and the standard of mill feeds be left to the new board of directors to adopt a resolution and forward to the Seed Commissioner." Carried.

MR. BRETHOUR: We would like to be armed with this resolution so that we can meet the millers on this question. In the past these mill feeds have contained too much fiber and also injurious weeds. There is a very large quantity of screenings available, and they are very cheap, and I have found them excellent feed, and I used five carloads this year. The standard recleaned screenings are very high grade. I bought two loads last fall at $14 per ton.

THE CHAIRMAN: I think a resolution could be drafted in such a way as to meet all requirements.

## REPORT OF COMMITTEE ON PEDIGREES.

The Pedigree Committee recommends as follows: That Article 15 be amended to read as follows: The following Animals may be admitted to registry:

1. *Berkshires:*

(a) Animals born in Canada, the sires and dams of which are registered in the Canadian Swine Breeders' Record.

(b) Animals born in Great Britain or Ireland, registered in the British Berkshire Herd Book.

(c) Animals born in the United States, registered in the American Berkshire Record.

2. *Yorkshires:*

(a) Animals born in Canada, the sires and dams of which are registered in the Canadian Swine Breeders' Record.

(b) Animals born in Great Britain or Ireland, registered in the Large White section of the British National Pig Breeders' Association Herd Book.

(c) Animals born in the United States, registered in the American Yorkshire Record.

3. *Tamworths:*

(a) Animals born in Canada, the sires and dams of which are registered in the Canadian Swine Breeders' Record.

(b) Animals born in Great Britain or Ireland, registered in the Tamworth section of the English National Pig Breeders' Association Herd Book.

(c) Animals born in the United States, registered in the American Tamworth Swine Record.

4. *Poland China:*

(a) Animals born in Canada, the sires and dams of which are registered in the Canadian Swine Breeders' Record.

(b) Animals born in the United States, registered in the American Poland China Record.

5. *Chester White:*

(a) Animals born in Canada, the sires and dams of which are registered in the Canadian Swine Breeders' Record.

(b) Animals born in the United States, registered in Chester White Swine Record, Rochester, Ind.

6. *Duroc Jersey:*

(a) Animals born in Canada, the sires and dams of which are registered in the Canadian Swine Breeders' Record.

(b) Animals born in the United States, registered in the National Duroc Jersey Record.

7. *Hampshire:*

(a) Animals born in Canada, the sire and dams of which are registered in the Canadian Swine Breeders' Record.

(b) Animals born in the United States, registered in the American Hampshire Record.

8. *Large Black:*

(a) Animals born in Canada, the sires and dams of which are registered in the Canadian Swine Breeders' Record.

(b) Animals born in Great Britain or Ireland, registered in the Large Black English Herd Book.

# ONTARIO SWINE BREEDERS' ASSOCIATION

The Annual Meeting was held in Toronto on February 13th, 1923.

## OFFICERS.

### Directors.

*Yorkshires:*—J. K. Featherstone, Russell Templar, Arthur Welstead, D. J. Lerch.
*Berkshires:*—H. A. Dolson, Wm. Brownridge.
*Tamworths:*—Chas. Boynton.
*Chester Whites:*—W. F. Wright.
*Duroc Jersey:*—J. O. Duke.
*Poland Chinas and Hampshires:*—Geo. Gould.

### Representatives to Fair Boards.

*Canadian National Exhibition:*—H. A. Dolson.
*Western Fair, London:*—W. F. Wright, Geo. Douglas.
*Ottawa Winter Fair:*—J. W. Brant, J. C. Stewart, G. B. Rothwell, W. P. Hurdman.
*Ontario Provincial Winter Fair:*—P. J. McEwen, W. F. Wright, Russell Templar, Geo. Douglas.
*Royal Agricultural Winter Fair:*—Cecil Stobbs, W. F. Wright, J. I. Flatt.
*Eastern Canada Live Stock Union:*—J. E. Brethour.

*Auditor:*—Mr. G. de W. Green.

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## FINANCIAL STATEMENT.

Of the Ontario Swine Breeders' Association, year ending December 31st, 1922.

### Receipts.

| | |
|---|---|
| Cash on hand as per last report | $46 01 |
| Grant, Canadian Swine Breeders' Association | 402 00 |
| | $448 01 |

### Expenditures.

| | |
|---|---|
| Directors' expenses | $289 15 |
| Printing | 6 50 |
| Grant, Ontario Yorkshire Breeders' Society | 70 75 |
| Reporting annual meeting | 10 00 |
| Room rental, annual meeting | 10 00 |
| Membership, Eastern Canada Live Stock Union | 25 00 |
| Express on hogs, educational courses | 18 66 |
| Audit | 3 00 |
| Cash on hand | 14 95 |
| | $448 01 |

(Signed) J. E. Rettie, *Secretary-Treasurer.*

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## PRESIDENT'S ADDRESS.

Cecil Stobbs, Wheatley.

At the Directors' meeting held yesterday there was a discussion about having uniform rules and regulations at all fairs and exhibitions. The information required about animals entered is not the same at all shows. The Royal Winter Fair in particular asked for more information than any of the

other exhibitions. The directors would like to see this question discussed here, and a uniform standard adopted which could be used by all Fair boards.

Another matter which was discussed was the freight regulations. The directors suggested that a pamphlet might be prepared by the Live Stock Commissioner's office, giving information to shippers and breeders. Many shippers are confused by frequent changes in the tariff. There are a great many shippers who do not understand L. C. L. shipments, and in some cases agents have been told not to accept five head in a car without securing special permission.

W. F. WRIGHT: What information is asked by the Royal Winter Show that is not required by other shows?

The Chairman: At the last minute exhibitors were required to give the name and number of sires and dams. Some exhibitors have not as yet received their prize money on that account. The Live Stock Record Office state that all they require is the name and number of registered animals. I think it would be much better if there was the same standard of requirements for all fairs.

W. F. WRIGHT: The Royal Winter Fair asked for the name and the registered number of the sire and of the dam and also of the animal exhibited, otherwise they would not pay the prize money. The rules and regulations of the Fair do not state that these names have to be given. In the case of steers and wethers the name and the registration number of the sire and dam had to be given. They said it was necessary to have that information to return to the record office and the record office say they do not require it. This question is a very important one, and I think all Fairs should have the same form. I think the name and registration number should be given of the animal, and it should be on the form at the time of making the entry. The Canadian National Exhibition have not an entry form that will permit of that information being given in the case of sheep or swine; it can be given in the case of horses and cattle, but there is no room for it on the entry form for sheep and swine.

Moved by Mr. Wright, seconded by George Gould: "That Fairs and Exhibitions be asked to adopt uniform regulations re entries. Information to be given of registered animals, date of birth, name and registration number. Pure bred animals not registered, date of birth, name and registered number of sire and dam."

After some discussion the motion was adopted.

Moved by Mr. W. F. Wright, seconded by Mr. A. Welstead, "That owing to frequent changes in freight classification and tariffs, making it difficult for shippers to know all conditions attending the shipping of live stock, That the Live Stock Commissioner be asked to prepare a pamphlet giving an outline of the main points of classification and regulations for circulation among live stock men." Carried.

MR. WRIGHT: A minimum of $7 has been set for shipments of carload lots, and in my opinion that is rather high. If the breeder ships one or two animals by freight he cannot have the advantage of the half rate because the minimum has been set at $7.

MR. BRETHOUR: That matter should be referred to the Eastern Live Stock Union. The railway companies realize that there is a great deal of expense in handling these cars and sometimes the car is required for three or four days and I would move: "That the matter of the minimum freight rates be referred to the Eastern Canada Live Stock Union for action." Carried.

## HOG GRADING.

A. B. McDonald.

I would prefer that you should ask questions on some of the points that you are not clear on, as to how the grading is done in the Province of Ontario, and I might be able to clear up some of the criticism that has been made on hog grading up to the present time. I will give you a few of the main features of the objections that have been made by farmers and breeders.

We have had a rather rough task so far. I hope you all realize that hog grading is not as easy a proposition as one would think. There are many at the present time criticising us for not taking more action and putting the system into operation in a quicker way, but you must remember that it is absolutely impossible to shift a market of five million hogs from one system to another in a short time. We have been operating for only three months and the system of marketing cannot be changed in three months, or even in a year. Undue criticism has been made by men who did not keep that point on view. If, after one or two years, hog grading is not giving satisfaction, then it would be time to criticise. We have been receiving a great deal of criticism, but we have not been receiving sufficient constructive criticism from men who should be at the back of this proposition. With the experience we have had during the past three months, and with the assistance we have been receiving, I believe we are making sufficient progress to make it well worth while and to warrant us going ahead with it in a more complete way. It has been said that our graders are not doing efficient work. Most of you know that we have secured the best men we could to carry on the work. We selected our ten graders from fifty applicants, and I feel assured that they are grading the live hogs that are coming to the stockyards at not more than between five and ten per cent. error. It is almost humanly impossible to grade live hogs with 100% efficiency, it cannot be done, but we are grading them within a narrow margin of error. The error works both ways and therefore nobody is hurt to any great extent. It has been questioned as to whether the premium that is being paid on the select bacon hog is getting back to the farmer. I feel safe in saying that of the hogs marketed since the 1st of November, 25% of them have been sold on the graded basis. You may say that it is a small percentage, but I consider it is a fairly good percentage because a scheme of this kind cannot be put into operation within a very short time. It is going to take some years before we will have between 75% and 90% of the hogs sold on a graded basis. A good percentage of the premium is going back to the farmers. We are getting the premium back to the farmers through the system of co-operative marketing of hogs as carried out by the U.F.O. Commission House. About 90% of the hogs handled by this Commission House are sold on the grading basis, and the individual producers are receiving the benefit, with the result that there are farmers all over the Province who are receiving the premium, and the system is receiving a great deal of commendation in certain sections of the Province. There are other ways by which the premium is going back to the farmers. For instance, some buyers are buying on the graded basis, and they are arbitrarily grading the hogs at the loading point, and the principle of grading is being worked out in that way. Some of the packing plants are sending a premium to the producers. A drover will buy hogs on a flat basis, and there may be one or two marked hogs in the shipment and they are graded individually; if there are any select bacon hogs in the load the premium is sent direct to the producer, so that in the main, certain sections are receiving the premium. It will take

two or three years to get this system into perfect working order; difficulties will arise to-morrow that we had not thought of to-day and we will have to meet these difficulties. I think it is wise to go slowly. It is impossible to work fast in a system of this kind and we ask for your support in every way.

I have seen certain men watching our grading at the Toronto Yard and they have said, "These men don't actually know what they are doing." The reason for that is the men who make the criticism are not sufficiently qualified or acquainted with the standard of grading to be competent to judge as to the efficiency of the grader's work. I know men who are more or less high up in agricultural work but who still do not know the requirements for grading a bacon hog. Some of the hogs that are going in the second class might look long enough and trim enough and smooth enough to go in the first class, but they cannot be put in the first class on account of the standard of grading that we have adopted.

A MEMBER: Supposing a drover refuses to take hogs on the graded principle, what then?

MR. MCDONALD: If a drover will not take them in that way then the farmers will find some other way of marketing their hogs. When the farmer knows that he will receive a premium if his hogs are sold on the graded basis he will want to sell them in that way, and it won't be long before the farmers in that section will market their hogs in some other way than by shipping them through a drover.

MR. GERMAN: One shipper at Port Stanley shipped a number of hogs to the Brantford Packing Plant, and he asked to know how the hogs came out. When the hogs were killed there were seven or eight of them select, and the premium on them came to $19 and some cents, and the Brantford Packing Company made out a cheque in the shipper's name and sent it to the drover. The drover returned the cheque to Brantford and said he did not want it, he would not turn it over to the man who had fed the hogs.

MR. MCDONALD: That is an exceptional case, I would think the drover would want to hand the cheque over to the feeder of the hogs.

MR. BROWNRIDGE: I went up to the stockyards yesterday, and saw them grading. The hog goes through a narrow way into a three-by-four box and is weighed. If he is over weight he is put down as too fat, and if he is too thin the grader puts his head through a window and looks down over his back. I do not think that man could tell whether that hog is select or smooth or what grade it should be in.

MR. MCDONALD: You must bear in mind that we have to have an equipment that will do the work and that will not interfere with the operation of the plant. There are two equipments for grading hogs. One has a folding door that makes two divisions of the hogs, this swinging door will divide a carload into two different lots. That is the old type of grader that is still being used in some of the plants but which has been demonstrated to be entirely too slow. The most satisfactory type of grader is the one we are using at the Toronto Yards and some plants in the Province. It is true that the grader cannot see the side of the hogs when they are being graded in an alley, but he can see the back and he knows the length of the hog and they can do fairly efficient work, and they grade the hogs within five or ten per cent. of error.

MR. FEATHERSTONE: Do you think the grader would have a better chance to see that hog if the box was elevated when going over the scales, and if there were iron bars so that the grader could have a side view?

MR. MCDONALD: I have to admit that it is not entirely perfect.

Mr. German: It is my opinion when you get this system perfected all the hogs will be graded on the rail, and you will have better success when that is done; that will be much better than grading them alive. I think that is the system that is adopted in Denmark.

A Member: I understand there are four grades of Wiltshire sides, and that prime Wiltshire is not paid a premium at the present time. The Western Live Stock Union is of the opinion that all prime Wiltshire should be paid a premium, and I think paying 10% for leanest Wiltshire sides is causing more dissatisfaction than any other thing.

Mr. McDonald: You must remember that prime Wiltshire sides in England are selling at eight to ten shillings per hundredweight below leanest. On account of that fact a hog that will cut out a prime side is not entitled to as high a premium as a hog that will cut out leanest. We have to abide by the regulations under which we are working.

Mr. Murdock: I want to give you my experience: I have been interested in hog raising for twenty years, and I have always tried to get something that will make a Wiltshire side. There are districts in this Province where they are holding to the old type and from that district 151 hogs were brought down yesterday, and if they had not been spoiled in the feeding and finishing, 145 of them would have made the best bacon hogs. What is required is an educational campaign to teach the people to produce the hog that will grade the best. In one load that came in there were sixty hogs that were graded, and I watched them being graded, and I do not think there were 2% that were No. 1. All that was the matter with the heavy hogs was that they made to many pounds, they were just over that 210 pounds. There are a number of farmers throughout this country who have been selling to the dealers, U.F.O. and everybody else. They sell their hogs free on board, and if I bought hogs in that way I would not make any returns, after grading, to the man I bought them from. The Packing Companies buy these hogs in that way, and they will not pay for them twice. If they buy them free on board they will not pay the premium, but if they are instructed that the pigs are sold on the graded principle then they will make returns. The dealers are not in favour of buying on the graded principle, because they have not sufficient experience to buy them in that way. There is complaint in the country because one man will get returns and another will not. In some cases the hogs are bought on the flat rate and they will be good hogs.

Mr. Douglas: I went to the stockyards this morning to see what I could see in regard to grading. One thing I noticed in particular was that most of the select hogs had been bought without grading. I saw one carload that there was not a select hog in it. They were all graded; and only nine were taken out of the bunch. It may be that I have lost confidence in the men who are doing the grading, but I would say the man I saw grading was not an experienced pig feeder. The packers buy the poor hogs on grade and the select hogs they buy straight.

# THE ONTARIO CATTLE BREEDERS' ASSOCIATION

The Annual Meeting of this Association was held in the Carls-Rite Hotel, Toronto, on Thursday, February 15th, 1923, at 10.00 a.m.

## OFFICERS.

*President*.....John Gardhouse, Weston.
*Vice-President*.....W. E. Thomson, Woodstock.
*Secretary-Treasurer*.....R. W. Wade, Toronto.

### Executive Committee.

John Gardhouse, Weston. R. W. Wade, Toronto.
W. E. Thomson, Woodstock. B. A. Bull, Brampton.
John McKee, Norwich.

### Directors.

*Jersey.*

B. A. Bull, Brampton. H. A. Dolson, Cheltenham, No. 1.

*Ayrshire.*

John McKee, Norwich. W. W. Ballantyne, Stratford, No. 3.
H. C. Hamill, Markham.

*Hereford.*

L. O. Clifford, Oshawa. H. D. Smith, Ancaster.

*Aberdeen-Angus.*

G. C. Channon, Oakwood. George McAllister, Guelph.

*Holstein.*

W. E. Thomson, Woodstock. R. W. E. Burnaby, Jefferson.
Fred. W. Lee, Springford. Fred. E. Hilliker, Norwich.
G. A. McCullough, Navan. R. J. Kelly, Ingersoll.
Wm. R. Cummings, Cumming's Bridge. R. S. Stevenson, Ancaster.
T. A. Spratt, Billing's Bridge.

*Shorthorn.*

F. W. Scott, Highgate. John Gardhouse, Weston.
James Douglas, Caledonia. W. A. Dryden, Brooklin.
W. A. Wallace, Kars. Wm. Waldie, Stratford.
R. R. Wheaton, Thorndale. Geo. Gier, Waldemar.
A. G. Farrow, Oakville.

### Representatives to Fair Boards.

*Canadian National Exhibition:*—John Gardhouse, Weston.
*Central Canada Exhibition:*—W. C. Cummings, Ottawa.
*Ontario Provincial Winter Fair:*—John Gardhouse, Weston; John Lowe, Elora; John McKee, Norwich; R. S. Stevenson, Ancaster.
*Ottawa Winter Fair:*—Dr. J. H. Grisdale, Ottawa; R. G. T. Hitchman, Ottawa; W. C. Cummings, Ottawa; A. R. Dawson, Ottawa.
*Royal Agricultural Winter Fair:*—John Gardhouse, Weston; B. A. Bull, Brampton; W. E. Thomson, Woodstock.
*Western Fair, London:*—J. D. Brien, Ridgetown; W. W. Ballantyne, Stratford.
*Eastern Canada Live Stock Union:*—John Gardhouse, Weston.

## FINANCIAL STATEMENT.

Of the Ontario Cattle Breeders' Association, for the year ending December 31st, 1922.

### Receipts.

| | |
|---|---|
| Cash on hand as per last report | $622 22 |
| Legislative grants, 1921, 1922 | 2,000 00 |
| National Dairy Show grant | 300 00 |
| Beachburg shipment | 925 00 |
| Sault Ste. Marie Calf Club | 1,984 00 |
| Sault Ste. Marie, shipments | 370 00 |
| Refund, expenses field men | 100 00 |
| Refund, freight on bulls, etc | 355 33 |
| Miscellaneous | 49 00 |
| Refund, St. Paul, freight | 888 70 |
| | $7,594 25 |

### Expenditures.

| | |
|---|---|
| Directors' expenses | $183 85 |
| Printing and advertising | 281 00 |
| Beachburg shipment | 937 00 |
| Sault Ste. Marie Calf Club | 1,840 45 |
| Sault Ste. Marie shipments | 370 00 |
| Meetings, etc | 235 63 |
| Postage | 50 00 |
| Decorating booth, etc., Royal Fair | 37 27 |
| Miscellaneous expenses | 133 82 |
| Advance to field men | 100 00 |
| Advance *re* bull campaign | 300 00 |
| Help at Royal and Chicago | 26 00 |
| Audit | 5 00 |
| Freight, advances bulls, etc | 355 33 |
| Membership, Eastern Canada Live Stock Union | 25 00 |
| Feed, etc | 43 50 |
| Express charges | 15 23 |
| Expenses, St. Paul, freight, $869.25; personal, $355.60 | 1,224 86 |
| Exchange on cheques | 60 |
| Cash on hand | 1,429 71 |
| | $7,594 25 |

John Gardhouse,
*President.*

R. W. Wade,
*Treasurer.*

## PRESIDENT'S ADDRESS.

John Gardhouse, Weston.

I am pleased to see so many here taking an interest in trying to stimulate and promote the producing of good cattle in the Province, and trust that we have been doing fairly good work along this line during the past year. While we cannot say the cattle industry is all that we would like to say for it, I think I am quite safe in saying that there is perhaps no other line of business which is in a better or thriftier condition than the cattle business of this country; that is, where you are producing good cattle and caring for them as they should be cared for. Unfortunately, we have too many of the poor kind of cattle in the Province, and with labour conditions as they now are, and feed, transportation, and overhead charges, there are a great many cattle which are, to my mind, eating their heads off, and would have been just as well had they been slaughtered when they were calves. I am, however, quite safe in saying that there is no business that is paying better, when you are producing good cattle and caring for them as they should be cared for, than the cattle business, and when the cattle business is paying well there are some other things that

will happen. If you are keeping good cattle for the production of beef, milk, cheese or butter, or from whatever source your revenue may be coming from, you are also building up the fertility of the soil, which is going to enable farmers to grow better crops and be able to feed more cattle if they breed the right kind to be fed.

We are now going through a time of depression, but I think, perhaps you will agree with me, that during the Exhibitions this year there was a live interest taken in all the different breeds of cattle. Take for instance, the C.N.E., The Royal, or Guelph, the interest was really first-class, and the exhibits were good, so that there is still a feeling among the cattle men of the country that good cattle are worth while.

You no doubt know something about what has been done along the line of the "Better Bull Campaign" put on by the Department of Agriculture through the Live Stock Branch, in co-operation with the Improvement Committee, which was suggested by the Minister of Agriculture and formed over a year ago. As Prof. Day is Chairman of the Committee, he will no doubt be able to tell us something in connection with the work a little later on. There has been a very live campaign put on the last couple of years in the county of Oxford. Mr. Green, Agricultural Representative, is with us to-day, and also Mr. Thompson, Vice-President of the Ontario Cattle Breeders' Association.

The Cattle Breeders' Association has always been ready to assist any Calf Clubs that have been formed. Representatives coming to the Live Stock Branch, and wishing to secure cattle of any breed for clubs, were assured of co-operation and assistance from the Cattle Breeders' Association. These clubs, I think, are doing a very good work where they are properly formed and where good calves have been selected. I was asked to go to Walkerton this Fall to judge at their winter fair, where they had quite a large Calf Club. A lot of splendid young heifers were out on exhibition, which made a very creditable showing, and it was wonderful the interest shown by young boys who had received calves.

Another matter being undertaken by the Live Stock Branch, is sending out suitable men to inspect cattle being offered for sale. It is important where consignment sales are put on by Club or Association, that the animals should be real good individuals before they are offered for sale.

Some time ago we had an Executive meeting, at which we discussed the getting out of a pamphlet or some advertising matter, to be sent to the different Agricultural Representatives throughout the Province, pointing out the advisability for the laying of a better foundation stock at the present time, and trying to show those men who are supposed to be leaders in their sections, the advisability of getting rid of some of the poor stock they are now carrying, and laying a foundation of real good stock when they can buy at prices that would make it really worth while, as prices are now down to rock bottom and many breeders are carrying surplus animals.

I think we should commend the Minister of Agriculture for the Province for the grant given to the Cattle Breeders' Association to assist exhibits at Foreign Exhibitions—the exhibit of dairy cattle at St. Paul and the exhibit of beef cattle at Chicago. I think there was something over twenty head of Ontario Holsteins exhibited at St. Paul, and from all reports they made a very creditable showing, advertised the Province of Ontario quite extensively, and was, I believe, worth while. We will have a report from Mr. Lee regarding the St. Paul exhibit a little later on. An exhibit of beef cattle went to Chicago—I think about ten head of Shorthorns and four Angus—of which practically

all were able to get in the money, making a very creditable showing for Ontario. I wonder whether it might not be well to get the Minister to go a little farther along this line, and not only assist in sending Provincial exhibits to shows across the line, but to assist to some extent in sending a Provincial exhibit to some of our Western Provinces. I think we should have pretty good markets in the Western Provinces for all breeds of cattle produced here, and if we in Ontario are going to be the breeding ground for Canada, which I think we are, it would be well worth while to impress on the Minister of Agriculture the importance of not only assisting exhibits to go to St. Paul and Chicago, but also to some of our large fairs in Western Canada. This is a matter I would like to hear some of the breeders discuss a little later on.

I would now like to say a word to the pure-bred breeders of this country. I find Mr. Wade, and those under him who have been out buying bulls, often come back and say, "That it is difficult to buy as good a bull as they should be able to secure at a price that the average man can pay." The small breeder feels that he is not in a position to buy a good bull, and this applies, I understand, to practically all breeds, perhaps more, however, to the beef breeds than dairy. It is important that we try to breed bulls so that they can be sold to those wishing to purchase, in such a way that the buyer may have some return for his money. He is not going to be able to continue in the business if you do not give him an animal worth while. One of the difficulties, as I see it, is that the smaller breeder who has a pure-bred herd of cows is not using a good enough sire. The sire he is using is not any too good to use on grade herds, and are not the type to produce sires good enough to get big, strong, robust, fleshy animals, such as we should have in this country.

You heard a resolution read in reference to the embargo, which we are pleased to note has been lifted, as this will give us another string to our bow. We hope to have a good market in the Old Country in the near future. I therefore wish to impress on every man here that if we expect to have a market and continue to hold it we must produce the animals that will satisfy the Old Country people. We should try to produce animals which can be shipped to the Old Country and assist in building up a trade there which is worth while. There is the tariff, as you know, on Canadian cattle going across the line, which is our natural market. As long as this remains, we cannot expect to have just as good a market there as we would like. We cannot say how long it will remain on or how soon it may be taken off. The transportation question is quite an important one also, as very often the manner of getting animals from one place to another stands in the way of making a deal. Freight rates were reduced a year ago on all kinds of live stock with the exception of horses. Horsemen, however, are taking this matter up at the present time with the hope that something may be done.

Last year, I mentioned the matter of a dead meat trade with the Old Country. It seems to me as close to the Old Country market as we are in Canada, that something might be worked out along the line of having cattle slaughtered here, and shipped over. The length of the trip is just about the time meat should hang to be sold as fresh meat. This is a matter which might be brought to the attention of the Federal Department. It may be that transportation and ships are such that it cannot be worked out; but if it could, and our meat after a few days' haul across the Atlantic could be landed and sold as fresh meat, it would mean a great deal to this country.

I would like to have the cattle men feel very optimistic about the cattle business. I have the feeling that when there is no money in the cattle business

there will be mighty little in anything else in this country, and think this will apply to all breeds of cattle, perhaps more particularly to dairy breeds than beef breeds, as they are producing milk, cheese and butter. As I said before, if you are producing good cattle and dairy products on the farm, you are building up the farm, which is building up the country. I heard a gentleman at one of the meetings yesterday say that "If the breeders of the country would get down to the breeding of good cattle there would be very little trouble in paying off our national debt." We cannot keep on spending in this way without some way of producing, and to my mind one of the best ways is to produce good cattle.

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## ONTARIO LIVE STOCK IMPROVEMENT COMMITTEE.

PROF. G. E. DAY, *Chairman.*

I would like to congratulate the President upon the very able manner in which he has presented a number of very important points. I think that there are two points at least this meeting might do well to consider very carefully. One of these is the assistance towards exhibitors at western shows. I do not know how that would affect all the breeds, but think it would affect a number of breeds just about as much as it affects the breed in which I am particularly interested. I have found in knocking around through Western Canada a tendency for breeders to look to the south of the line for breeding stock, which is a condition of affairs I think very unfortunate. As an individual I have done my best to steer them down this way. I tell them I thought the experience we had had in our trade with the Americans, the way they had closed the door upon our commercial stock that we should try to deal within our own country as far as possible. One of the best means of attracting attention to Ontario stock would be a few good exhibits sent around the Class A circuit of these western fairs. I think a little money spent there would be more effective than sending stock to a foreign country. I think we should develop trade within our own country as far as possible.

There is one other point, and that is this chilled meat trade. Those of you who read the statement of Mr. McLean before the Western Livestock Union will remember what he said about shipments made by the Harris Abattoir, and pointed out how meat landed in excellent condition. It was away ahead of the stuff shipped across the equator. There was the prejudice of the consumer against imported meat, and the consumer was insisting upon home-killed meat. If I remember rightly he said some of the butchers hung up Canadian chilled beef and sold it right out for home-killed beef and the consumer did not know the difference; the result was a very serious loss upon shipments of chilled beef which Harris Company make to Great Britain.

I have written to the Department to know whether anything has been done by them to advertise and popularize Canadian chilled meat in the British market, and am told practically nothing has been done. Now I am not advocating a form of independent packing stores or anything of that kind, but it does look to me as if the Department of Agriculture might call a meeting of the packers and say: "You make shipments, small shipments if you will, but small regular shipments to Great Britain, and we will put on a force and open stores if necessary in some of the densely populated districts, and we will advertise and push well all Canadian beef till we break down prices. If that can

be done the whole matter is settled. I see no reason why if Canadian beef is equal to the home-killed beef of Great Britain, and if the British retailer can cut up Canadian beef and sell it to his customers as home-killed beef, why in the name of common sense cannot that prejudice be broken down? You have to go right after it; there are no half way ideas about it. It seems that there is the place to spend the money and let the packer co-operate and forward regular shipments. A strong resolution should come from every livestock association urging upon the Department something along that line. We have lost our market to the south, and perhaps a good thing for us. I think it is a pity that market was ever opened for us. We have been going along living in a fool's paradise and depending on the Americans and not looking to that place of outlet for our stuff which will be permanent; for when the will strikes them they block up the outlet, and we have no organization to take care of our products. We are left stranded, and in the meantime great hardship is suffered. I would like to see a resolution from this association urging upon the Department some very active work in connection with the popularizing of Canadian chilled beef in the British market.

I might say this that the activities of the Committee have been directed along several lines. One line has been the general advertising. Certain advertisements have been prepared and appear in the press especially in connection with the cattle industry. Certain recommendations have been made regarding purchasers of pure-bred bulls; those who purchase pure-bred bulls for the first time a number of things have been mentioned.

Perhaps one of the most interesting things is the sending out of this demonstration train or whatever it may be called, in the sending of which the co-operation has been secured of the Canadian Pacific Railway, the Canadian National Railways, The Dominion Department of Agriculture and Ontario Department, the Ontario Livestock Association, the Toronto Livestock Exchange, and the Industrial and Development Council of the Canadian Meat Packers. The purpose of the train is to display to the farmers the proper type of livestock. In addition to the stock carried there will be pure-bred bulls and pure-bred boars and sows carried for sale to meet the requirements of the farmers. It would perhaps be too much to give a full outline of the places to be called at, but the itinerary calls for it to commence March first and continue till the 25th April, starting in Peel County, Grey, Simcoe, Wellington, Perth, the Hurons, Bruce and Waterloo, Middlesex and swing around coming back through Kent, Haldimand, Lincoln and into Wentworth working back towards Toronto again, and then there is an eastern train which takes in many points in the eastern parts of the province.

The success of this work will depend upon the reception it receives at the hands of the farmers in the various districts visited, and that means that an active advertising campaign has to be carried on to familiarize people along the line that this train is coming.

MR. BOWMAN: Speaking about the chilled beef trade to the Old Country, Mr. Wilson, who was in the butcher business in the Old Country before he came to Alberta, said the other night that, "By law meat imported must be sold that way and they have to have letters an inch high showing it was imported meat."

PROF. DAY: I would put the letters a foot high, "Canadian Beef," and hammer that as hard as you could, "Canadian Beef, it is better than yours." It will force them to eat it. Get them eating it. Advertise it as Canadian beef.

## THE VALUE OF MAKING AN EXHIBIT.

FRED W. LEE: Although I am not as familiar with beef lines as other lines, I think there is a marked difference in the relationship of British people towards we Canadians since the war than there was before. They are ready to help us out, and ready to try our wares along any line more readily than they were before. They got acquainted with a lot of Canadian boys, and admire us as people, and all recommendations along that line will be far easier to put through now than before. I was pleased with the remarks of Prof. Day when he spoke about the tariff wall that has bothered our exportations to the United States. I thought when I first read it that possibly it was, so to speak, a blessing in disguise. I thought when we built up a trade with the United States, so long as we are British subjects and always will be, we built up something that was an uncertainty; but when we build up a reputation in the Old Country we are getting where we ought to have been in the beginning. I think that is where our future course should be steered, both towards the western market and eastern market, the Old Country trade.

I was pleased with what our President said about the western fairs. Probably this is not the proper time to discuss the question. I happened to go out West last year and we took a good show. The prizes last year were a little smaller than they have been for some years past owing to the desire of the government to curtail expenses. The prize lists were out before this cut was made, and the actual grant was made known to the shows, therefore the prize list was lower than before; but I can say even with our great stocks in the western shows last year it was a difficult matter to break even. I do not like to be personal in any remarks of this kind, but I might say since we are all working to the same end in the advancement of the live stock in Canada, that we sold a number of bulls in the western provinces, mostly in Alberta and Saskatchewan, and the enquiries that have come in since we sold them have been very marked. They want good bulls and good producing cows. They want something that will build their herds up. We have had too many dealers shipping out to make the almighty dollar, shipping poor stock and making it a dumping ground. In that way we have injured our cattle business. It is time we should be a little more careful, and in building up trade to-day we should look to the future. Anything we ship out there let us see to it that it is going to build the western provinces up.

I might say for the information of some of the men not familiar, that in the dairy line although we have made great progress during the last year, we have found in this connection that bulls of proven ability—that is proven ability to produce from the dam's standpoint—have not been available in the numbers desired, so the Federal Department of Record or Performance Branch has been looking into it, and we will have new regulations in regard to the records and performance rules. In the past the government has been giving large sums of money towards men going around and putting the government stamp on the records. Cows are milked two or three times a day, a test is made; the tester stays two or three days at the one place, and the test for the two days are kept during the month or whatever time till another test is made. Farmers have been taking advantage, and possibly, I think, test one or two cows. We want to devise a means by which a farmer will test all his cows. He will find cows of low production and cows of high production, and when a man in a western province wants a bull from a cow that gives twelve thousand pounds a year he can get it and get a large field of choice. He can get a bull of proven ability.

I was glad to hear the remarks of the President in regard to a little assistance towards an exhibitor who is willing to run the risk of taking his cattle to the west and showing them to the western breeders. The western farmer is very wary; he has been bled many times, but is willing to invest his money if he can get something good. I do not know the nature of the assistance; possibly it has been talked over in the Department. If there was some co-operation with the railways so they would give a reduced rate to the exhibits of the east, and then a little assistance from the Department, it would go a long way towards more exhibits of a better quality in the west. There are a lot of obstacles that will come in front. Mr. Wade and I know something about that in regard to the St. Paul shipment. I think it could be worked out, and I hope such assistance will go through. We want to build up the western trade and all Canadian trade. We are told the natural course of trade should be north and south. There are arguments in favour of that. There are historic reasons and even better reasons why the trade should be east and west. The Americans are using great publicity in the west, and are doing the same thing in England and Japan, and some of the eastern and western countries. They have field men. They are great men to push their business; but we are too much in the line of sit still and watch the other fellow and be afraid he has better stuff. The first exhibits that were taken to the other side four years ago to Chicago brought American buyers to this country, and some of the very best herds in the states have bought foundation stock in Ontario. They have bought cattle in Ontario they have never had the like of. They are advertising in Ontario, and saying they are the best representatives of the breed they have in Ontario. They admit the fact they are bred in Ontario. We do not advertise the fact they are bred here. I think that is one of the very things we lose sight of. We in the Holstein business have hopes of shipping cattle to the Old Country. I can say last year we got correspondence from the Holstein office of the Old Country, and they were astounded to have heard some of the best stock came from Ontario. They had been led to believe by American breeders that the United States had a sort of a monopoly on all the good cattle in the world. They had lost sight of the fact that Canada had cattle of equal quality, and I honestly believe so far as percentage is concerned we have them beaten on quality, and certainly have in regard to production. Nearly all of the world's record cows seem to have been bred right here in this province.

This exhibit in St. Paul was made possible by the Ontario Cattle Breeders' Association. We farmers are great people to be careful; we have to be. The National Dairy Show was taken so far away it was impossible to make an exhibit there; the competition was so keen and it was impossible to make it from a financial standpoint. We came to the department of agriculture and they gave certain assistance; but if an exhibit over there were not successful in winning you might say almost a major portion of the prizes it would certainly be a great loss financially. We came to the Ontario Cattle Breeders, some of the directors, and we decided that we would turn our prize money over to the Ontario Cattle Breeders and they in turn pay the expenses over and above what were paid by the Ontario Government. This was done, and I am pleased to say out of six championships that are awarded at the National Dairy Show, three of these came to Ontario. That is something wonderful when you stop to think of it. There was the senior and grand champion bull, and the junior champion female, that went to the States. Ontario got three; surely that is a record well worth while. There were upwards, we are told, of 100,000 dairymen visited the exhibits. I do not think there is any show where there is such a

large percentage of dairymen visit as there is at that show. With all respect to our good shows there were four or five times more dairymen visited the show there.

The Jerseys made a wonderful exhibit two years ago. I believe you got three of the championships then, and the American people were still talking about the Jersey exhibit this year. It seemed to be as it were sticking in their crop. They thought nothing could be pulled off to equal that in any other line. They began to think we had Jersey cattle but did not have any Holsteins. I am pleased to say the Cattle Breeders, with the co-operation of the government and enthusiasm and desire for greater progress of our worthy Secretary and President, it was only with their co-operation this exhibit was made possible, and we as Holstein Breeders appreciate it very much indeed, and if such exhibits can be carried on in the west I think it will be a great credit to us as the Ontario Cattle Breeders. I would like to see some resolution and greater discussion to the extent that some form of assistance could be given western exhibits.

I might say in regard to the average production of cattle, we here in Canada have a greater average production of dairy cattle than in the States, but we haven't quite half the production as in Denmark. Switzerland claims to have better production per cow.

D. O. Bull: I must thank Mr. Lee for his very kindly remarks regarding the Jersey exhibit at the National Dairy Show. I must reciprocate by saying I believe the Ontario Holstein exhibit created about the same sensation that the Jersey exhibit did a year ago. I suppose it is up to me to explain why the Ontario Jersey Breeders did not send an exhibit. It was a matter of business policy; it wasn't that we were afraid of being defeated. It is a fact that some of the best prizes went to animals that had been sold by Ontario breeders to American exhibitors. A bull that was a winning bull a year ago is an Ontario bred bull, and has since been sold to one of the largest and wealthiest concerns in the United States to be their trump card next year at a price of $7,500. There is a great demand for dairy cattle all through the west. There is a carload of Jersey cattle leaving within the next few days for the west which have been purchased at an average price of $1,500. So there is a real market there for dairy cattle, and I very much approve of the President's remarks in regard to assistance to exhibitors in the west.

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## LIVE STOCK IMPROVEMENT.

### W. E. Thompson, Oxford County.

I am sure I do not want to take up very much of your time. We have been, as you all know, doing considerable work along the line of live stock improvement in Oxford County. We have been working in conjunction with the cattle breeders in trying to see what can be done to improve stock in a general way throughout the county. We have been working now for some two years. Possibly we were a little late starting in the game, so the other counties got about twelve months lead on us; but I would like here to make it very clear that through the co-operation of the breeders in our county we have been able to attain a measure of success. At the outset, we decided to call the representative men from each township to consider the matter and to make any suggestions which we thought might be of assistance in this work throughout the county. At this meeting when the proposition was brought before the representatives they

were all strongly in favor of taking some action along that line. We organized, and at once started our campaign; but one of the things we felt was a considerable handicap, was how we were going to find out the places where the most need for the work existed. Some party of the group suggested that we approach our township councils and see what could be done along the line of getting statistics through the county as to what the whole population might be. We approached our township councils, and they very gladly fell in line and got the necessary information for us as far as they could. Some of the assessors were a little reluctant to take on the work, and did not do it in a very satisfactory manner; but speaking on the whole it was very well done. The next step we took was to go and have a meeting of the breed association and put the proposition to them and asked for their co-operation. We got their hearty support, and the assistance which they rendered us made it possible for us to go out to the men who were owning scrub bulls and grade bulls and put a proposition up which was very atttractive and which they took hold of at once, and by the fall of the year we shipped out some four carloads of bulls out of the county. Since that time the work has gradually gone on till the present time. Out of about 250 visits made in the months of November and December, we found 221 of these men owning grade and scrub bulls at home. After explaining the proposition to them, and with the work that had been done previously, we now have only thirty men who have retained the grade bull. I am pleased to know there is hardly a week goes past since that time that some of these men who have been interviewed have come to us and asked us to look up a pure-bred bull of the right type to take the place of the grade which they had. On Friday I was a little struck and well pleased to have a man from the section of the county which we visited where there seems to be a bunch of very poor cattle. They have formed a practice of raising a bull right out of their own herd, breeding it, and using it for one year and then slaughtering it. This man came up and asked me to look him up something in the Shorthorn line that was good enough, a good producer and high testing cow. On Saturday I got busy and got a bull from a breeder who has a reputation of having good live stock, and the bull would average the man around $125—not an exorbitant price by any means. But when I told him where I wanted to put it, the owner at once said, "I will make a donation to that man of $25 off the price of the bull." That is the kind of co-operation we are getting from our breeders in Oxford County to help the live stock improvement association to do the effective work we are doing up there.

Just leaving that point, and taking up another phase of co-operation, we have the hearty co-operation of the press in our county. We have a reporter who is very much interested and very enthusiastic in the work which is being done. He is at our disposal any time we wish him to write up any articles which we would like to have written up to help on with the work, and I would like to say in connection with this that we have the co-operation of the manager of the paper. I think just there there is a little lesson for us to take. If we would co-operate with the press a little more in our live stock business, I think that we would get a great deal more consideration than we do at the present time. I am only just throwing this out as a suggestion to show you what has been done in Oxford County, and which can be duplicated in other places. We intend to continue the work in the county, and I think the next two years will be much easier sailing than in the past two years, and the good work is bound to go on. We figure on cleaning up the county in two years, and I think at the present rate of going, when we had 600 grade bulls and now we have less than 250, we are pretty well along towards our objective.

G. R. Green: You have already had a very clear outline of what we have been attempting to do in Oxford County by way of improving stock by eliminating a bunch of our grade bulls. What has been done up there can be done anywhere; there is no doubt about it. I know in some counties the people just naturally hesitate to take hold of this thing, because it is interfering with business, and there was that feeling in Oxford County when we got started. I personally just backed up from it because we did not know what was going to happen; a man on a farm does not like to be told he has a scrub bull. It is not a very nice thing to do, but it can be done. Three things that have been helpful to us: There was the census; you cannot do anything until you know who has the scrub bulls. When you want to place bulls you cannot place them until you get the bulls to place, and most assuredly we have had the co-operation of the breeders in the county. All we have had to do is to tell the men what we wanted, and they have been willing to come across to meet them. When you know where the bulls are to go and have your supply, all it takes is some real work to put it across. This last year we have made some 475 personal visits. When you get a man in his own stable, or on top of the manure pile, if you have any kind of a reasonable proposition he could not get around he will buy a bull. There is the very best of feeling on the part of the breeders and on the part of these men who own the scrub bulls, and these men are beginning to realize when they get a bull that they do not need anybody's scrub. Further than that I do not know that I have anything to add except to convey to Mr. Wade and the officers and directors of the Ontario Cattle Breeders' Association our very sincere thanks, not only for the financial assistance but other assistance that has been asked for and received to put the proposition across in Oxford County.

## Peel County.

J. A. Carroll: I do not know that it is necessary for me to say very much about this better bull campaign after what has been said by your directors and president and by the Oxford representatives. In case I should forget, I want to assure the cattle breeders that we as agricultural representatives appreciate the work they are doing. We really believe headway is being made, and they are going about it in the right way. There is no department in any of the Government's from which we are getting more persistent and more active help than from the live stock branch represented by Mr. Wade. I would like to congratulate Mr. Green and those who have been working with him in Oxford County, as he has set a pace it is going to be hard for the rest of us to follow. We find in our county the proposition is a little different in that we have mixed breeds. We have a section which is close to the city where very few calves are raised. Where you have a man who is merely keeping a bull to keep his cows with calves you have a little more difficult proposition to handle than where you have a man raising his calves. We realized on the start, and we believe it more firmly now, that it is not any hundred yard sprint. It is a long distance race, and we have to so plan our organization and work at it and stay at it for a number of years. We have been successful in Peel County. We have been able in the township, we have been doing most of the work in which is a mixed dairy and beef one, to reduce the number of grades from 50% to the last census a year ago to 18½%. Last spring's work has not been included yet. Last year we were successful in getting a census all over the county. What rather surprised us, and I think Mr. Green and Mr. Thompson, and some of the rest of you will admit it, is that there is not that resentment

which we expected. If the thing is properly handled there is very little antagonism at all. We had that feeling when we started, but we have broken it down, and the individual feels he is doing good work. Speaking of it being a long distance race, we find that quite a few men who have been in the habit of keeping a pure-bred bull come to our man, Mr. Dawson, or come to our representative in the township and ask him to go with them. I think good progress is being made and I am hopeful for the future.

## RESOLUTIONS.

On motion of G. E. Day, seconded by J. A. Carroll, it was resolved, "That the Ontario Cattle Breeders here assembled, wish to express their thanks to the Press of the Province for the co-operation they have given the Association in their 'Live Stock Improvement' work, and especially does the Association wish to commend the work of the *Woodstock Sentinel Review* for its generous and public spirited support in the Live Stock work in Oxford County." Carried.

It was moved by F. W. Scott, seconded by W. A. Wallace, "That the Minister of Agriculture for Ontario be asked to render assistance to Breeders in making exhibits to shows in the Western Provinces." Carried.

Moved by F. W. Lee, seconded by James Bowman, "That the Ontario Cattle Breeders request that the Railway Companies assist the 'Better Live Stock Campaign' by allowing shipments of exhibition stock to be shipped in 40 or 42 foot cars, at the same rate as 36 foot cars, and thus avoid injury to stock by crowding, also that two men be allowed per car to accompany stock." Carried.

On motion of James Bowman, seconded by H. M. Pettit, it was resolved, "That the Ontario Cattle Breeders' Association respectfully requests the Dominion Department of Agriculture to institute an extensive and vigorous campaign to advertise and popularize Canadian chilled beef in the British market." Carried.

Moved by W. E. Thomson, seconded by D. O. Bull, "That whereas, we feel that a census is essential before undertaking 'Better Sire' work, and whereas, we believe that the obtaining of this information can be most satisfactorily accomplished by the regularly appointed Municipal Assessors; Therefore, be it resolved, that the Directors of the Ontario Cattle Breeders' Association approach the proper authorities without delay, and urge that definite action be taken on the resolutions passed by our Live Stock Improvement Committee, referring to the census of sires to be taken by Assessors." Carried.

It was moved by F. W. Lee, seconded by James Bowman, "That the representatives of the Breed Associations, hereby become Directors of the Ontario Cattle Breeders' Association." Carried.

# THE CANADIAN SHEEP BREEDERS' ASSOCIATION

The annual meeting of the Canadian Sheep Breeders' Association was held in the Hotel Carls-Rite, Toronto, on Monday, February 12th, 1923, at 8.00 p.m.

## OFFICERS.

*President*.....H. Follett, Duval, Sask.
*Vice-President*.....Geo. L. Telfer, Paris, Ont.
*Secretary-Treasurer*.....R. W. Wade, Toronto.

### Executive Committee.

H. Follett, Duval, Sask.
Geo. L. Telfer, Paris, Ont.
W. A. Dryden, Brooklin, Ont.
Wm. Whitelaw, Guelph, Ont.
R. W. Wade, Toronto, Ont.

### Directors.

F. S. Black, Amherst, N.S.
Arsene Denis, St. Norbert Station, Que.
Victor Sylvestre, St. Hyacinthe, Que.
H. Follett, Duval, Sask.
George Gordon, Oak Lake, Man.
Geo. Ball, Strathcona, Alta., No. 2.
G. H. Hadwen, Duncan Station, B.C.
Geo. L. Telfer, Paris, Ont.
Col. Robt. McEwen, London, No. 4.
Wm. Whitelaw, Guelph, Ont.
John R. Kelsey, Woodville, Ont.
W. A. Dryden, Brooklin, Ont.

### Representatives to Fair Boards.

*Canadian National Exhibition:*—W. A. Dryden, Brooklin.
*Central Canada Exhibition:*—W. A. Wallace, Kars; D. D. Gray, Central Experimental Farm, Ottawa.
*Royal Agricultural Winter Fair:*—H. Follett, Duval, Sask.; Col. Robt. McEwen, London, No. 4, Jas. Douglas, Caledonia.
*Eastern Canada Live Stock Union:*—J. D. Brien, Ridgetown.
*Western Canada Live Stock Union:*—H. Follett, Duval, Sask.
*Canadian National Record Board:*—Jas. Douglas, Caledonia; Col. Robt. McEwen, London, No. 4; W. A. Dryden, Brooklin; Jas. Snell, Clinton; J. D. Brien, Ridgetown.

## FINANCIAL STATEMENT.

Of the Canadian Sheep Breeders' Association for the year ending December 31st, 1922.

### Receipts.

| | |
|---|---|
| Cash on hand as per last report | $3,984 23 |
| Registrations | 6,453 53 |
| Memberships | 2,329 00 |
| Adjustment charges | 93 39 |
| Bank interest | 72 25 |
| Sale of books | 26 00 |
| | $12,958 40 |

### Expenditures.

| | |
|---|---|
| Directors' expenses, etc | $1,287 26 |
| Record Office, conducting record, 1922 | 3,600 00 |
| Printing records | 3,385 17 |
| Printing notices | 19 50 |
| Printing ballots | 47 02 |
| Room for general meeting | 16 45 |
| Reporting general meeting | 20 00 |
| Membership, Eastern Canada and Western Canada Live Stock Union | 25 00 |
| Box, Royal Agricultural Winter Fair | 40 00 |
| Counting ballots, 1921-1922 | 6 00 |
| Audit | 5 00 |
| Cash on hand | 4,507 00 |
| | $12,958 40 |

(Signed) H. Follett,
*President.*

(Signed) R. W. Wade,
*Treasurer.*

## DIRECTORS' REPORT.

The following is a statement of the monthly receipts at the Record Office on account of sheep in 1918 to 1922 inclusive, including both registrations and memberships:—

| | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|
| January | $756 40 | $807 70 | $831 20 | $1,041 85 | $898 15 |
| February | 646 70 | 828 85 | 605 40 | 498 85 | 556 60 |
| March | 419 20 | 657 90 | 761 00 | 685 65 | 584 00 |
| April | 341 80 | 381 25 | 732 40 | 623 30 | 477 15 |
| May | 380 25 | 351 55 | 759 30 | 465 45 | 371 85 |
| June | 382 10 | 491 00 | 657 25 | 475 45 | 464 10 |
| July | 405 80 | 599 45 | 709 17 | 706 45 | 529 20 |
| August | 876 55 | 1,062 50 | 887 05 | 1,189 02 | 855 35 |
| September | 1,400 51 | 966 40 | 751 15 | 636 89 | 514 90 |
| October | 1,209 30 | 1,121 35 | 918 70 | 683 75 | 853 70 |
| November | 1,185 70 | 1,092 20 | 1,503 34 | 1,138 70 | 1,437 13 |
| December | 837 95 | 941 80 | 1,294 90 | 1,169 60 | 1,266 40 |
| | $8,842 26 | $9,301 95 | $10,410 86 | $9,314 96 | $8,808 53 |

The following is a statement by Provinces of Registrations, Transfers, Duplicate and New Certificates received at the Record Office in 1922:

| Provinces | Registrations | | Transfers | Duplicate and New Certificates |
|---|---|---|---|---|
| | 1921 | 1922 | | |
| Ontario | 4,075 | 4,057 | 2,363 | 11 |
| Manitoba | 331 | 473 | 210 | ..... |
| Saskatchewan | 539 | 410 | 259 | ..... |
| Alberta | 1,232 | 659 | 494 | 6 |
| British Columbia | 165 | 185 | 59 | 1 |
| Quebec | 1,775 | 1,687 | 1,126 | 2 |
| New Brunswick | 267 | 169 | 166 | 3 |
| Nova Scotia | 227 | 178 | 121 | ..... |
| Prince Edward Island | 147 | 123 | 42 | ..... |
| United States | 132 | 42 | 22 | ..... |
| | 8,890 | 7,983 | 4,862 | 23 |

The number of each breed of sheep recorded in 1916 to 1922 inclusive, is shown in the following statement:—

| | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|---|---|
| Shropshires | 2,967 | 3,151 | 3,410 | 337 | 4,743 | 3,309 | 2,935 |
| Leicesters | 1,594 | 1,595 | 1,859 | 1,593 | 1,271 | 1,167 | 923 |
| Oxford Downs | 1,701 | 2,023 | 2,478 | 2,771 | 2,285 | 2,157 | 1,870 |
| Southdowns | 260 | 278 | 263 | 271 | 318 | 293 | 338 |
| Cotswolds | 399 | 336 | 499 | 400 | 299 | 205 | 258 |
| Lincolns | 122 | 164 | 225 | 161 | 125 | 198 | 178 |
| Suffolks | 297 | 397 | 429 | 425 | 290 | 303 | 404 |
| Hampshires | 340 | 339 | 453 | 421 | 666 | 441 | 462 |
| Cheviots | 81 | 144 | 80 | 254 | 240 | 137 | 173 |
| Dorset Horns | 291 | 294 | 323 | 378 | 327 | 172 | 182 |
| Romney Marsh | 41 | 26 | 319 | 136 | 106 | 182 | 7 |
| Rambouillet | ..... | ..... | 23 | 263 | 34 | 355 | 17 |
| Corriedale | ..... | ..... | ..... | ..... | 2 | ..... | ..... |
| | 8,093 | 8,747 | 10,361 | 7,410 | 10,706 | 8,919 | 7,747 |

## STATEMENT OF RECORD OFFICE.

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Sheep Breeders' Association:—

JANUARY 1ST TO DECEMBER 31ST, 1922.

| | |
|---|---|
| Registrations and memberships, etc. | $8,808 53 |
| Interest | 72 25 |
| Received from Record Committee on account of 1921 charges | 93 39 |
| | $8,974 17 |

RECEIPTS AND EXPENDITURES FOR CONDUCTING THE SHEEP RECORD.

RECEIPTS.

| | |
|---|---|
| Received from Association to pay salaries | $3,600 00 |
| Part salary paid by Record Committee | 1,870 86 |
| | $5,470 86 |

EXPENDITURES.

| | |
|---|---|
| Salaries to December 31st, 1922 | $4,803 18 |
| Refunds | 200 86 |
| Balance owing to Association | 466 82 |
| | $5,470 86 |

(Signed) JNO. W. BRANT,
*Accountant.*

(Signed) GEO. L. BLATCH, F.C.A.,
*Auditor.*

## IMPORTATIONS.

The total number of importations during 1922 was 65. All but seven of these came from the United States, and were made up of the following breeds:—Southdowns, 48; Shropshires, 8; Hampshires, 2; Oxford Downs, 6; Dorset Horns, 1.

## RECORDS.

Total number of Record Books on hand, 2,540.

The number of paid up members of the Canadian Sheep Breeders' Association from 1916 to 1922 inclusive are as follows:—

| | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|---|---|
| Ontario | 261 | 275 | 358 | 370 | 442 | 450 | 498 |
| Quebec | 292 | 317 | 353 | 343 | 328 | 317 | 320 |
| Manitoba | 27 | 46 | 57 | 66 | 61 | 44 | 56 |
| British Columbia | 13 | 15 | 22 | 25 | 25 | 21 | 21 |
| Saskatchewan | 40 | 56 | 75 | 89 | 76 | 65 | 47 |
| Alberta | 54 | 75 | 83 | 107 | 108 | 92 | 90 |
| Maritime Provinces | 42 | 50 | 48 | 69 | 82 | 73 | 83 |
| United States | 6 | 6 | 10 | 10 | 4 | 5 | 5 |
| | 735 | 840 | 1,006 | 1,079 | 1,126 | 1,067 | 1,120 |

## PRESIDENT'S ADDRESS.

H. Follett, Duval, Sask.

It is just a year ago since we met here before, and I can assure you it is a real pleasure to see so many real sheep men present. It makes one think that the sheep industry is rapidly getting out of the mire. During the so-called deflation period, we have had a lot of near-bankruptcy, and a good deal of real bankruptcy. The liquidation period is rapidly nearing an end.

The Dominion of Canada, arriving at the end of the year 1922, has every reason to look back over the past twelve months with a sense of intense satisfaction, and to face the prospect of the next twelve months in a spirit of faith and optimism. The past year has seen the last struggle in emerging from the period of post-war depression, and the taking of the first lengthy stride in the new and more prosperous way. This is not a mere venturing of opinion, but an existing state of affairs which will only be appreciated when the cold, convincing figures of production are published and enjoyed in retrospect. In practically every phase of her national activity Canada has, in 1922, seen the dawn of bright conditions evidenced in her enhanced output.

The sheep and wool markets are climbing to a profitable level, stock and breeding sheep are advancing satisfactorily, mutton and lamb are growing more popular every year on our city markets. And with more care in preparation and fitting of the product the lamb consumption per capita could be greatly increased. There is a great shortage of breeding sheep in Canada to-day. We have about one sheep for every third person, and in New Zealand there are seventeen sheep to each man, woman and child of the population. Why there should be so few sheep in a country with the acres of uncultivated land that Canada has, is difficult to explain. The climate is one that calls for woollen goods for at least eight months of the year (and sometimes longer out West). Yet we annually import more wool and woollen goods than are produced in this country. Canada has a market right at her own door, for two or three times her present production.

Candidly, I would like to see the time when a small flock of sheep is kept on every farm. Also I wish to say that the Ontario breeders deserve very great credit at the wonderful showing they made at the Royal and Chicago, where I understand at the former there were over 700 sheep from all over Canada and the States, and I can assure you it was a pleasure to me to note that Canada, or as I should say Ontario, was at the top in most classes, although Saskatchewan did top one class also winning a champion. Also not forgetting the wonderful feat of Col. McEwen of breeding and fitting the Grand Champion Wether and the Champion Carload at Chicago.

Now just a word about the future of the sheep industry. It is more than ever on a lamb and ewe basis. Perhaps I am stepping on very dangerous ground, when I say that the time is not very far off when the yearling wether will be a thing of the past, as in the larger shows in England and Scotland they have discarded this class for this next year. I mean to say that the biggest good lamb a man can raise is the most economical, and the most profitable from the mutton standpoint. I was very much interested in the three lamb class at Ottawa about three weeks ago, and I watched the judging very closely, and with so many real good ones in the class it was real pleasing to me to note that the judges put at the top a pen of three Suffolks, which was a very great credit to the breeder for having them in such splendid show shape. Judges and buyers went after the small stuff consistently at the shows, but not in that case.

A 100 pound lamb is better than a 75 pounder in the majority of cases. It won't pay any more to raise a wether for the fleece he will produce, a ewe will do that and raise a lamb besides, and when a ewe has raised a lamb or two she doesn't owe anybody anything. There is not much but prosperity ahead for the sheep business, if it is kept on a lamb and ewe basis. Now, let us get down to brass tacks and take proper care of the sheep we have, and raise better sheep in future.

At several Grain Growers' meetings at my home town and through the press, I have been asked is there any money in sheep? But the hardest question I was asked, was there more money in hogs than sheep? A gentleman asked me this question who happened to hear of my very latest experience in shipping hogs. I shipped 840 pounds of pork to Winnipeg, and upon the return of the shipper he came to me and stated that I owed him $2.35 on the hogs, so I considered that in future I would not hesitate in saying that there is more money in sheep than hogs, as far as my experience went in that particular shipment.

## TRUTH IN FABRIC BILL.

H. S. Arkell, Live Stock Commissioner, Ottawa.

I understand you want a report from the Committee appointed last year to interview the manufacturers relative to the standardization of cloth in reference to the proposal that a "Truth in Fabric Bill" should be presented. Your Committee made representations to the manufacturers at a meeting held in Hamilton, and we had a very useful discussion with them respecting the whole question of the sale of cloth manufactured in Canada, and the manner in which the middleman's profit might be reduced as far as possible, and the manner in which those who were purchasing Canadian made goods might be able to determine that they were Canadian made goods as compared with imported goods, and might be able to determine the quality of these goods. There were representatives present from the Purchasers' organization, the Canadian Sheep Breeders, the Canadian Co-operative Wool Growers, Limited, the Provincial Department of Agriculture for Ontario, and our own Department.

I need not go very fully into the discussion that took place, except to say that the question was pretty fully covered. We did not have as full a delegation from the manufacturers as might be desired, but those who were there intimated that they would present the whole question as submitted to them to a larger meeting, and it was proposed that after a meeting of the manufacturers had been held we should be advised as to the conclusions which had been reached. Unfortunately, the manufacturers at the time were not prepared to follow through in a definite tangible way the proposals that had been submitted. I think the full intention of the meeting in that respect was not fulfilled, and we have not yet been able to obtain a definite understanding of the agreement with the manufacturers as regards the various qualifications of wool.

## REPORT OF COMMITTEE DEALING WITH "FROZEN MUTTON".

Col. Robert McEwen, London.

I do not know that I have very much to say on this question. It is a difficult subject to handle, for there are so many phases in connection with it, and so many interests involved, that any Government handling the question

has to consider very carefully before taking any action. The question is a very important one, and I believe in the interest of our sheep producers some action should be taken. I do not believe that sufficient consideration has been given to the sheep breeders, and think more might be done in the way of preserving our home market. I think it would have a very good influence in increasing sheep breeding in our country if more consideration were given to that point. When we realize that mutton can be produced in such large quantities in countries like Australia, but of a quality that does not compare with what we grow here, and yet it can be put on our market, even though the quality is not up to the standard of our own lamb and mutton, and for that reason we cannot expect a large demand for lamb and mutton. We can grow in this country a quality of lamb that everybody would like to have on their table, but the difficulty is in getting a constant supply of it. A large quantity is brought from Australia and put in storage, and it is not up to our product in any way. I think some consideration should be given to our home market, and more satisfactory results obtained. I would like to urge on the authorities that consideration should be given to our breeding interests so that they will have a greater advantage than they have at the present time, and I would like to see these efforts still continue until some results are obtained.

We possibly do not realize the disadvantage the people who are raising sheep are under. About the time this was being urged on the Government, the breeders operating on a large scale in Southern Alberta and Saskatchewan could not sell their lambs, for the simple reason that the Australian product was being sold in Calgary, and the dealers did not care to offer a sufficient price for Canadian grown lambs. The breeders in Western Canada were unable to secure cash for their lambs, and some of them were sent down as far as Fort William and fed and ultimately sold on the Buffalo and Toronto market, realizing a good profit. The Calgary market could absorb a great number of these lambs if it were not for the competition from Australia. We hear a great deal in the West about a reduction in the tariff, and I believe the breeders of sheep in the West will agree with me that they would be very glad to have some protection from these countries that are competing with them.

THE CHAIRMAN: I think Col. McEwen is right, and that this question should not be dropped. It would be a good idea to safeguard anything like what happened last year in the future. I understand that lambs are now being taken up and fed by feeders. As a matter of fact, they are contracting a year ahead for lambs.

Moved by Col. Robt. McEwen, seconded by F. S. Black, "That the Committee on Import of Lamb and Mutton be continued." Carried.

F. S. BLACK: The idea of appointing a fieldman is a good one if we can raise the necessary money to carry it out. Now that the wool growers are at work and increasing the price of wool we should do everything we can to help along the business. There are a number of sheep raisers who do not seem to know that black wool is a detriment, and I think a fieldman would do a lot of good work in that respect and in many others.

J. A. MCCLAREY: With the assistance of the Live Stock Branch, and the assistance we are receiving from the Provincial Department, we are doing good work; in our Provincial Association, we are about $500 ahead and feel that by importing a few sheep we can do good work, and we think that it would be well for the sheep industry if the extension work was left in the hands of the Live Stock Branch. They are doing excellent work at the present time, and we think any money we have to spare should be used in importing rams.

M. Ste. Marie: Considerable extension work has been carried on in the Province of Quebec by the Live Stock Branch of the Provincial Department during the last five years. With the Quebec Sheep Breeders it is not so much a question of extension work as getting good rams. A good many of the Ontario Breeders are aware of the fact that we came up here to buy Ontario rams, but we are now wanting something better, and are gong to raise a fund so we can send over and buy sheep from the Old Country to be distributed to the breeders of less prominence. We think that would further the interest of sheep breeding much better than sending a man to travel over the country that has already been covered by the Provincial Department.

Mr. McKillican: If we have any surplus it occurs to me that the Provincial Associations would know better as to the best way of spending that money. I think securing good rams for some of the backward districts is a good idea. They could be shipped into these districts, and the Association could stand the expense of shipping them in. If we could get some help in that line from the Central Association it would be a great benefit. I notice that the Secretary counted next year's books for the purpose of reducing our surplus. There is already one book charged in our accounts and now he is putting in another. If there is any surplus the Provincial organizations would know best how to distribute it.

Mr. Ball, Alberta: We sometimes make up our minds to a certain thing and then change it, and I was quite in favour of the proposition of a fieldman this afternoon in regard to doing a little missionary work in some of our districts where our sheep are practically nondescript animals. There are a great many districts where they are using grade lambs, and the stock is becoming inbred year after year; and there are places where the lambs are not castrated or docked, and you can imagine what they would be like. This money might be used by the Provincial Associations to help secure better rams in districts of that kind. The Federal Government now have Live Stock representatives in different parts of the country who are in touch with breeders. There is one in Calgary, and he travels north to the Peace River Country, and he keeps in touch with the farmers over that area; he gives advice in connection with all kinds of live stock, and is in a position to tell these people the kind of sheep the trade demands. I think any surplus we have should be distributed among the Provincial Associations.

Mr. A. Morin: I am of the opinion that the money should be given to the Provincial Associations. As Mr. Ste. Marie said a few minutes ago, we are planning to import rams so as to have better stock in the country, and I think that is the best way of boosting the sheep industry at the present time. I think the work of fieldman should be done by the Government. They are now doing it very well in the Province of Quebec.

Peter Porter: I do not believe we should ask for a tariff on mutton or wool, but I believe we should impress upon the Government strongly that we require help in getting our Canadian mutton on the market so that the people will know Canadian mutton just the same as we farmers know that the implements we use are made in Canada. I am opposed to asking for a tariff, and I cannot sit still and not protest against it.

Regarding advertising, I might say, that there are a number of pamphlets coming to our homes all the time. I do not read half of them. I believe if we have any money to spend it could be spent to a better advantage in our farm journals under the heading of the Canadian Sheep Breeders' Association, and we might also support the Canadian National Exhibition.

Moved by J. A. McClarey, seconded by Arsene Denis, "That the surplus money be distributed according to membership to the Provincial Associations to be used as they see fit, in the promotion of the sheep industry in each particular Province."

PETER PORTER: I would move that the Directors be a Committee to spend what money they see fit. I do not know who would know better how to spend the money than the Directors. I do not like the motion that has been made that the money should be spent by the Provinces.

Moved by F. S. Black, seconded by J. D. Brien, in amendment, "That the Directors be instructed to spend the money in such ways and means as they see fit in the best interest of the Sheep Breeders at large in the Dominion of Canada."

GEO. BALL: The original motion was that this money should be distributed on the basis of membership in the different Provincial Associations, and I would like to add to that recommendation as to how this money should be spent. Some associations might use this money for additions to their prize list, but I do not think that is what we want to have done.

GEO. GORDON: I believe that if the money is divided according to membership and registration, that the Provinces that need it least will get the most money. There was a resolution passed at the annual meeting in Manitoba that I should ask this meeting for a grant. I have some figures to show what the Live Stock Branch did last year in the northern part of Manitoba, where they found 3,800 sheep in the Lake District north of Winnipeg, and there were only two pure-bred rams in the whole district. The Live Stock Branch put a man in there who castrated and docked the sheep, and got up a show at which there were exhibited about 800 lambs, and they got a buyer to come from Winnipeg who bought the lambs. A lot of good work was done in teaching the farmers up there how to take care of the sheep, and they were able to sell them 33 rams, and we are hoping that the Live Stock improvement train that is going out will be taken up through that district. Personally, I am in favour of leaving the money where it is.

JOHN MILLER: I have an amendment to the amendment: Moved by Peter Porter, seconded by John Miller, "That the Directors be a committee to spend such money, if any, as the organization deems wise in the interest of sheep breeding in general." Carried.

## TRUTH IN FABRIC.

Moved by R. H. Harding, seconded by Geo. L. Telfer:

"For a number of years the wool growers of the United States have been endeavouring to have 'Truth-in-Fabric' legislation enacted that will oblige textile manufacturers to state on their goods what percentage of virgin wool it contains. It is claimed that, in some instances, wool is worked over as much as eight or ten times, which is detrimental to the wool-growing industry and unfair to the buying public.

"Those who have championed this Bill in the United States are now making substantial progress, and expect that it will soon become law.

"Mr. A. L. Hodgins, member for East Middlesex, has already placed a resolution on the Order Paper asking for the introduction of a similar Bill in the House of Commons during the present session of Parliament, and we as wool growers should give every support and encouragement to this effort to obtain fair and equitable legislation in the interests of all the people.

"Therefore be it resolved:

"That we the members of the Canadian Sheep Breeders' Association urge the Canadian Government to enact fair and equitable legislation that will ensure truth in fabric; and in such an effort we pledge them our undivided support."

R. H. HARDING: If this is carried out it will check up a certain amount of the shoddy that is coming into this country, and I think the matter should be followed up. It is not a matter of putting the Government in any particular position on the tariff it is merely a question of the stockmen getting their just deserts from the country they are living in.

GEO. L. TELFER: As the seconder of the resolution I would like to say that one of our members, who is the member for East Middlesex, is taking hold of the question and I understand he is introducing a bill which will be put before Parliament, and if we think it is a Bill that is worth getting behind, I would strongly advise that a resolution be sent from this meeting backing up the Honourable Member for East Middlesex, and if we do that we will be falling in line in supporting that for which we stand. As far as the Bill itself is concerned I see no legitimate reason why it should not be passed. There is no doubt there will be opposition to it from certain parties who are connected with the wool business, but that should make us all the more determined to press forward our claim for the betterment of our product. Our finished product is wool and lamb. It does not seem hardly possible that we have not been able to do anything with regard to marketing our lamb. How would it do to have signs printed and placed on all Canadian lamb where it is hung up "Grown in Canada." By doing that we would educate our people to the superiority of our own mutton. The people in the United States are gradually bringing this matter to the front and in a very short time they will make it the law of the land, and that will encourage us to do likewise.

JOHN WILSON: Why not ask the Government to adopt the British system of marketing; it would be very easy for us to copy that system. All butchers handling meat for sale have to state that the meat is imported, and there is a very heavy fine if they do not do so.

W. A. DRYDEN: This "Truth in Fabric" resolution that is before the meeting covers a wide territory. It not only affects the interest of sheep breeders and growers of wool, but it affects the interest of a very large body of people other than these. While we may be sentimentally sympathetic with this motion, yet I do not believe every member of this Association is in a position to-night to vote intelligently and advise the Government as to regulations along the lines suggested by the motion. It seems to me that we are taking the whole thing in one gulp, and that we are not in a position to properly consider it. It would be much better if we gave it some thought. I am of the opinion that a Committee should be appointed to study the whole situation, in conjunction with the officers of the Department of Agriculture at Ottawa. I do not think we should ask the Government to enact legislation when we are not sure of what we want. I believe in getting everything we can every time we can, but I believe it would be the part of wisdom to go slow on this proposition. I believe we would get farther ahead if we made sure of our ground. And I therefore move in amendment:

"That the matter be left for the consideration of the Executive Committee of the Canadian Sheep Breeders' Association, in conjunction with the Live Stock Commissioner, Mr. Arkell."

Seconded by Mr. Peter Porter.

The amendment being put to the meeting was declared lost.

The original motion was then put to the meeting and carried.

## RESOLUTION REGARDING WOOL MARKETS.

Moved by Ernest Robson, seconded by James Douglas:

"That whereas Canada is supporting only a fraction of the number of sheep that could be maintained on Canadian farms with benefit to agriculture and the country at large; as sheep are an important factor in weed control, and, owing to the scarcity of sheep, weeds are an increasing menace and farms are dirtier.

"Inasmuch also as the sheep is one of the chief food animals, and its wool is raw material for Canadian industries, it is a subject for deep regret, from a national point of view, that so important a national and primary industry as sheep rearing should be allowed to lag for want of fair treatment.

"United States tariffs are a serious obstacle to trade in wool and lambs with that country, and the Canadian farmer has no compensating advantages to encourage him.

"The customs tariff of 1907 did provide for a small duty on certain types of wool entering Canada, but that regulation has been practically inoperative and the wool growers have been exposed to world competition in selling their wool on the Canadian market. This we consider a gross injustice, especially since practically every other industry enjoys substantial protection.

"Canada is capable of producing all kinds of wool of the finest quality, but owing to market conditions and the uncertainty of profits our sheep stocks are dwindling.

"Therefore be it resolved:

"That we, the members of the Canadian Sheep Breeders' Association, respectfully urge the Dominion Government to consider the importance of the sheep industry of Canada, and so frame a tariff policy as to encourage sheep rearing and wool production in this Dominion.

"And be it further resolved that copies of this resolution be sent to the Honourable the Prime Minister and to the Honourables the Minister of Agriculture, the Minister of Trade and Commerce, and the Minister of Finance." Carried.

E. W. Robson: I have some figures secured from Ottawa showing the imports of wool in the last few years. This includes goat's hair and camel's hair in the raw shape. I do not know how much of it was goat's hair and camel's hair, but in 1921 we imported 9,152,167 pounds valued at $2,503,859. In 1922 we imported $1,585,150 pounds valued at $3,877,036. In worsted tops we imported in 1921, 3,966,947 pounds, and in 1922, 8,042,305 pounds. In waste wool last year we imported 955,704 pounds, and in wool waste, 271,000 pounds.

According to the figures I have, in 1922 we produced of sheep's wool, 12,770,072 pounds and of lamb's wool, 5,753,320 pounds. According to these figures we are importing a great deal more wool than we are growing, and we have a country that could produce much more wool than we require, and I think the only way to encourage the sheep breeders is to get a tariff that will encourage sheep breeding. It is claimed they do not allow any wool in free of duty such as we produce. We can produce any kind of wool in the Dominion of Canada that can be produced on the North American continent, and we will have to put a campaign on to educate our farmers to dock their lambs and castrate them. I believe Canada has only about two million sheep, and we have a population of over eight million people. I think we should ask the Government for some protection, and we will get it if we go after it in the right way.

It would help Western Canada more than any other part of the country, and I would like to see the men from Alberta, where they have been losing on their sheep, attend this meeting in greater numbers. Most of the men present are from Ontario where we don't keep more than 10 to 50 sheep, and the tariff would not make a great deal of difference to us.

James Douglas: If we are not producing the kind of wool that is demanded we can produce it, and should have the protection to encourage us to do so. We can shear our lambs in the fall if it is necessary.

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## ADDRESS.

H. S. Arkell, Dominion Live Stock Commissioner, Ottawa.

I do not know whether the members of the Canadian Sheep Breeders' Association are feeling as much satisfaction as I believe they should, as a result of last year's business. I do not know whether they appreciate how much progress has been made in connection with sheep breeding throughout Canada, as there has been during the past year. I would like to call attention to a few things that I believe ought to be known and considered as part of the progress of sheep breeding in this country. We have been congratulating ourselves with reference to the manner in which the Canadian sheep breeding business has got itself out of its difficulties in connection with the marketing of wool, and I want to say that almost a similar experience has been effected in connection with the marketing of Canadian lambs. We have been hearing some rather optimistic remarks with respect to the sale of Canadian lambs, and I want to tell the meeting that this year commendation has been made of Canadian lamb; namely, that it has made such a reputation for itself as a result of the work done in Eastern Canada and in Western Canada, that to-day Canadian lamb commands a premium in the New York and Boston markets in the hotel trade. Canadian lamb is advertised on the hotel menu, and the consumers are willing to pay the price for it. I happened to be in the Maritime Provinces when the tariff for lambs was put into effect in the United States, and almost an hour after the tariff became effective our officer in the Maritime Provinces received a wire from the representative in the New York market saying that the price has been raised sufficiently to take care of the duty, and netting the Canadian producer exactly the same as he would have received had the tariff not been imposed. If that is not a commendation of what Canada can produce in the way of lambs I have something yet to learn. I would like to tell you something of the progress that has been made from the Maritime Provinces to British Columbia in connection with sheep breeding. The lamb market in Montreal which, four or five years ago was nothing but a by-word to anybody who understood what good lamb was, is to-day recognized as one of the best lamb markets on the North American continent, and the prices being paid on the Montreal market have a large part to do with determining the value of lamb in Canada and that is the result of the work carried on by the various organizations and the Government. I believe Quebec Province absorbed last year 800 pure-bred rams, and very many of them were produced in Ontario.

You have been told about a little district between the lakes in Manitoba that before very long will be a real market for high-class breeding rams, and that has been brought about by the progress that has been made in connection

with the sale of lamb in this country, due to the fact that the consumers want lamb and are willing to pay for it, and the Canadian lamb is being advertised as a real tasty product that can be consumed in the summer months. I want to ask you whether you are preparing yourselves to meet that demand. I believe that the breeders of pure-bred sheep in Canada ought to address themselves in a way they have not yet done towards the improvement of their flocks. I believe the time has come when some real constructive breeding work should be done in a manner that has not been done during the past few years. It is a task that must be faced if we are going to meet the demand from breeders of commercial flocks. If the pure-bred breeders fall short, the commercial breeders are going to fall short; it is to your advantage to meet the situation. I know that there is need of introducing some high-class blood into this country, and I know that the condition in which that blood can be introduced is very difficult, but if there is any way in which our Department can assist you in that regard we shall be glad to do so. I believe that the market for Canadian lamb that has been established will continue, but that it can only be continued if we face the task in the proper way. Notwithstanding the success that has come to us within the last year, we must keep pressing forward. I want to pay a compliment to Col. McEwen in connection with the win he made at Chicago, due, I believe, to really careful selecting work, and that is the basis of all success.

I have more confidence than ever in the sheep breeding industry in this country. I believe the market for wool and lambs justifies an optimistic outlook in connection with the building up of this business in Canada, and I want to say that the progress that has been made imposes responsibility on the breeders of pure-bred sheep in this country. I hope they will face that responsibility in the way they have in the past, and that it will result in a continued improvement in sheep breeding.

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## SHIPMENT TARIFFS.

MR. STOBBS: A number of shippers and breeders are not conversant with the present tariff for L.C.L. shipments or carload shipments and, in order that every breeder and shipper may be properly informed, I would move:

"That a recommendation from this meeting be sent to the Live Stock Commissioner's Branch at Ottawa asking for a pamphlet to be issued, giving the sheep breeders the necessary information in regard to the shipment of live stock." Motion seconded by W. A. Douglas, and carried.

ROBERT MILLER: Everyone interested in reciprocal registering of Oxford sheep should communicate with the Oxford Association of the United States, and there is no doubt they would meet them. We have reciprocity with the Shorthorn Association and the Hereford Association, for the recording of cattle, and we have also arranged with the Shropshire Association for recognition of our records, but we are never sure about it because sometimes they say: "We have not got it." They will accept your animal if the sire and dam are recorded in this country, and they will use the Canadian numbers. The Government at Washington refused to recognize our herd books, and they insisted that all animals that came from Canada, entered in the customs by citizens of the United States for import into that country for breeding purposes, must show that they have been registered in this country, and they won't

accept certificates from their own association. So I think we should have every respect for our own association and back them up. We ought to be proud of the fact that our Record Associations as recognized in Canada are recognized throughout the world as being the standard that they should all try to regulate themselves by in recording animals. We are in the happy position that we can say that there is only one record for any breed of animals in this country, and they wish they could say the same thing in the United States.

GEORGE BALL: The express rates on sheep are causing a hardship on the purchasers of pure-bred animals. It is necessary to crate the sheep and hogs, and a hog weighing 250 pounds, with the crate, will weigh 300 pounds and the price of that hog would be, say, $40, and one sent from Edmonton to a buyer near Winnipeg costs $19.50 express. On a ram purchased for $40 and sent from Edmonton to near Winnipeg, it cost 50% of the purchase price for express. On a young bull weighing 500 pounds the express charges were $37.50. With the low price that is being paid for live stock and the high express charges, the breeders are under a considerable handicap. I paid $29.90 express on a hog that weighed 120 pounds that was shipped from Eastern Ontario to my home. You people in the east here seem to have lots of timber, and some of it is hard wood, and I would ask you not to make your crates any heavier than the animal that goes inside of them.

Moved by George Ball, seconded by Mr. Leitch, "That the Executive of the Canadian Sheep Breeders' Association take up the matter of express rates with the proper authorities to see if something can be done towards having them lowered." Carried.

COL. MCEWEN: Another difficulty is that some station-masters have instructions not to allow anything to be shipped out without authority in less than carload lots. We find that is a great difficulty where a man is purchasing half a dozen sheep and wants them shipped by freight, and it is a matter that should be referred to the new Executive to be taken up by the Railway Commission.

Moved by George Ball, seconded by Col. McEwen, "That all these matters as to freight rates and express rates that have been referred to, should be left to the Eastern Canada Live Stock Union." Carried.

# THE ONTARIO SHEEP BREEDERS' ASSOCIATION

The annual meeting of this Association was held in the Hotel Carls-Rite, at 9 a.m. on Wednesday, February 14th, 1923.

### Officers.

*President*.....James Bowman, Guelph.
*Vice-President*.....Cecil Stobbs, Wheatley.
*Secretary-Treasurer*.....L. E. O'Neill, Toronto.
*Executive Committee*.....James Bowman, Guelph.
Cecil Stobbs, Wheatley.
L. E. O'Neill, Toronto.
G. H. Mark, Little Britain.
D. E. McEwen, R.R. No. 4, London.

### Directors.

*Cotswolds*.....G. H. Mark, Little Britain.
*Dorset Horns*.....Cecil Stobbs, Wheatley.
*Hampshires*.....David Kelly, Shakespeare.
*Leicesters*.....Wm. Douglas, Caledonia.
*Lincolns*.....S. Gardhouse, Weston.
*Oxford Downs*.....Duncan Johnson, Appin.
*Shropshires*.....John R. Kelsey, Woodville.
*Southdowns*.....D. E. McEwen, R.R. No. 4, London.
*Suffolks*.....Jas. Bowman, Guelph.

### General Directors.

R. H. Harding, Thorndale. Ernest Robson, Denfield.
R. W. Wade, Toronto.

### Representatives to Fair Boards.

*Canadian National Exhibition:*—J. D. Brien, Ridgetown.
*Central Canada Exhibition:*—Geo. R. Thomas, Ottawa.
*Ontario Provincial Winter Fair:*—Jas. Douglas, Caledonia; John Kelly, Shakespeare; W. Whitelaw, Guelph; Geo. L. Telfer, Paris.
*Ottawa Winter Fair:*—W. J. Bell, Kemptville; Walter Graham, Britannia Heights; H. S. Arkell, Ottawa; E. S. Archibald, Ottawa.
*Royal Agricultural Winter Fair:*—James Bowman, Guelph; Col. R. McEwen, London; J. D. Brien, Ridgetown.
*Western Fair, London:*—John Kelly, Shakespeare; Jas. Snell, Clinton.
*Eastern Canada Live Stock Union:*—W. Whitelaw, Guelph.

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## FINANCIAL STATEMENT.

For year ending December 31st, 1922.

### Assets.

| | | |
|---|---|---|
| *Current Assets*— | | |
| Victory Bonds | $6,000 00 | |
| Stock, Co-operative Wool Growers | 5,680 00 | |
| Cash in bank | 1,419 68 | |
| Freight receivable | 881 19 | |
| | | $13,980 87 |
| *Fixed Assets*— | | |
| Adding Machine | $100 00 | |
| Calculator | 100 00 | |
| Scales | 200 00 | |
| Estimated value of agreements | 2,000 00 | |
| Miscellaneous | 25 00 | |
| | | 2,425 00 |
| Total assets | | $16,405 87 |

### Liabilities.

| | | |
|---|---|---|
| *Current liabilities.* | | |
| Cheques outstanding | | $ 587 38 |
| Grants payable— | | |
| Western Fair, 1922 | $100 00 | |
| Canadian National, 1922 | 100 00 | |
| Royal Fair, 1922 | 200 00 | |
| Ottawa, 1923 | 50 00 | |
| | | 450 00 |
| Special prizes— | | |
| Paris | $1 00 | |
| Mount Forest | 6 00 | |
| Woodbridge | 6 00 | |
| South Victoria | 6 00 | |
| | | 33 00 |
| Total liabilities | | $1,070 38 |
| Yet worth | | 15,335 49 |
| | | $16,405 87 |

### Receipts.

| | | |
|---|---|---|
| Cash on hand as per last report | | $326 46 |
| Sale of supplies and adjustment, account Co-operative Wool Growers | | 820 01 |
| Sale of shepherd supplies | | 9 01 |
| Dividends on stock | | 454 40 |
| Sale of escalator at Guelph | | 125 00 |
| Interest on Victory Bonds | | 220 00 |
| Interest on bank deposits | | 20 90 |
| Payment of Loan, Ontario Cattle Breeders | $200 00 | |
| Co-operative cars | 500 00 | |
| | | 700 00 |
| Refunds, postage | | 25 00 |
| Guelph Light and Power Company | | 1 27 |
| Wool accounts | | 5 40 |
| Ram sales, 1921 | | 245 50 |
| Ram sales, 1922 | | 1,198 75 |
| Sale of wool, 1921, as per statement | | 71,686 82 |
| Cheques issued and cancelled | | 211 07 |
| Miscellaneous | | 11 |
| | | $76,049 70 |

### Statement of Sale of Wool.

| | | |
|---|---|---|
| Sale of wool | | $96,256 72 |
| Sacks | | 288 40 |
| Trade dividend | | 689 55 |
| | | $97,234 57 |
| Cash advanced, 1921 | $5,500 00 | |
| Selling charges | 13,367 62 | |
| Freight and cartage | 847 02 | |
| Sacks, twine and shepherd supplies | 2,021 27 | |
| Grading charges at Weston, half cent a pound | 165 85 | |
| Woollen goods | 1,785 24 | |
| Stock on account of shippers | 111 04 | |
| Ontario Sheep Breeders' stock subscribed | 1,000 00 | |
| Deduction for stock in lieu of dividend | 680 00 | |
| Office help | 32 90 | |
| Adjustment on supplies | 36 91 | |
| | | 25,547 85 |
| | | $71,686 82 |

EXPENDITURES.

| | | |
|---|---|---|
| Ram sale, 1921 | | $62 00 |
| Ram sale, 1922— | | |
| Advertising | $39 20 | |
| Printing | 17 76 | |
| Auctioneer | 25 00 | |
| Payments to contributors | 1,097 00 | |
| Miscellaneous expense | 18 22 | |
| | | 1,197 18 |
| Audit fee | | 50 00 |
| Purchase of Victory Bonds | | 4,058 22 |
| Directors' expenses, etc | | 888 85 |
| Exchange on cheques | | 2 47 |
| Freight on Chicago shipments | | 881 19 |
| Reporting annual meeting | | 20 00 |
| Advertising sale of scales | | 78 |
| Inspection of scales | | 3 50 |
| Repairing scales | | 14 80 |
| Grants— | | |
| Western Fair, 1921 | $125 00 | |
| Ontario Provincial Winter Fair, 1921 | 500 00 | |
| Canadian National Exhibition, 1921 | 75 00 | |
| Ottawa Winter Fair, 1921 | 100 00 | |
| Ontario Provincial Winter Fair, 1922 | 400 00 | |
| Ottawa Winter Fair, 1922 | 100 00 | |
| | | 1,300 00 |
| Membership Eastern Canada Live Stock Union | | 25 00 |
| Cartage on sample supplies | | 2 00 |
| Loans—Co-operative cars | $500 00 | |
| Ontario Cattle Breeders | 200 00 | |
| | | 700 00 |
| Ontario Sheep Breeders' Association Silver Cup (long wool) | | 95 00 |
| Wreath | | 12 00 |
| Entry fee Chicago International | | 3 15 |
| Office help and expense | | 105 50 |
| Postage | | 300 12 |
| Printing notices general meeting | | 20 00 |
| Membership refunds, 1921, postal notes | | 91 56 |
| Rent, Winter Fair Building, Guelph, 1921 | | 200 00 |
| Net payments to wool shippers of 1921, with deductions for freight, membership, purchases of woollen goods, stock, handling charges, etc | | 65,090 08 |
| Special Prizes— | | |
| Woodville Fair, 1921 | $5 00 | |
| Weston Fair, 1921 | 6 00 | |
| Stratford Fair, 1921 | 6 00 | |
| Bolton Fair, 1921 | 6 00 | |
| | | 23 00 |
| Chatsworth Fair, 1922 | $15 00 | |
| Strathroy Fair, 1922 | 9 00 | |
| Verulam Fair, 1922 | 6 00 | |
| Erin Fair, 1922 | 6 00 | |
| South Brant, 1922 | 11 00 | |
| Melbourne, 1922 | 11 00 | |
| Ridgetown, 1922 | 4 00 | |
| New Hamburg, 1922 | 9 00 | |
| | | 71 00 |
| Cash on hand, with provision for outstanding cheques of $587.38 | | 832 30 |
| | | $76,049 70 |

(Signed) W. WHITELAW,
*President.*

(Signed) L. E. O'NEILL,
*Treasurer.*

## REPORT OF BOARD OF DIRECTORS.

Your Board of Directors herewith present to you their report of the work of this association for the year ending December 31st, 1922:

### Grants to Fairs.

During the year the following grants were offered to the following larger fairs:

| | |
|---|---|
| Canadian National Exhibition | $100 00 |
| Ontario Provincial Winter Fair | 400 00 |
| Western Fair, London | 100 00 |
| Ottawa Winter Fair | 50 00 |
| Royal Agricultural Winter Fair | 200 00 |

These fairs have all been held and the grants to Guelph and London have already been paid. The payments to Ottawa, the Royal, and the C.N.E. have not been paid to date, awaiting the complete returns for registration.

### Special Prizes at Local Fairs.

Early last spring, each director of the Association selected a fair in his own locality and over which he could have personal supervision for the offering of the following special prizes to boys and girls under 16 years of age:

Section 1.—Best ewe lamb, sired by a pure-bred ram.
Prizes 1st, $3.00; 2nd, $2.00; 3rd, $1.00.

Section 2.—Best wether lamb, sired by a pure-bred ram.
Prizes: 1st, $3.00; 2nd, $2.00; 3rd, $1.00.

The financial statement indicates the fairs which have already sent in reports of the winnings. Your directors feel that this form of assistance should be continued.

### Special Prizes at Sheep Fairs.

During the past year, special sheep fairs were organized and successfully carried through in the counties of Grey, Brant and Lanark by officials of the Dominion and Ontario Departments. At these fairs the Ontario Sheep Breeders' Association offered prize money amounting to $15.00 at each fair for a judging competition.

### Judges at Fall Fairs.

Your directors reported that quite often at the local fairs, very unsatisfactory results obtained, owing to the fact that some of the men who officiated as sheep judges were not sheep men. It was realized that where a fair is supplied by the Department with a judge, this man is often asked to judge all classes of stock. This is not only an injustice to the judge but to the exhibitor. Consequently your directors compiled a list of 25 or 30 names of good sheep men for recommendation for appointment. This list was submitted to J. Lockie Wilson, Superintendent of Fairs and Exhibitions, and recommended by him for appointment. It should now be possible for local fairs desiring a good sheep judge to obtain the same.

## Wool Work.

At the end of last year, payment had not been made for the wool consigned to this association in the season of 1921. Settlement for these accounts was made during the past year as shown in the financial statement. A change in policy in the co-operative handling of wool in this Province has been made during the past year. We hope that this change will be in the best interests of all concerned. This association no longer assumes responsibility for the collecting of the wool. The work of collecting and selling has been turned over to the Canadian Co-Operative Wool Growers, while the grading is still under the direction of the Dominion Live Stock Branch.

## Ontario Sheep Breeders' Cups.

You will remember that the long wool cup donated by this association and offered by the Guelph Fair was won permanently in 1921 by J. D. Brien. A new cup has been purchased during the past year to replace this cup and was won for the first time in 1922 by A. & W. Whitelaw. The short wool cup was won for the third time by J. D. Larkin and now becomes his property. Your directors would respectfully recommend that a new cup be purchased to replace this short wool cup.

## Recommendations to Fairs.

In compliance with your wishes, recommendations to Fair Boards have been made as follows:—

1. A recommendation was sent to the Central Canada Exhibition that the sheep be placed in a more prominent place in the fair ground.
2. A recommendation to the Ottawa Winter Fair, that transportation be provided for sheep from the station to the fair grounds and return.
3. A recommendation to the Western Fair, London, that separate classes be provided for the Suffolk and Cheviot breeds of sheep.
4. The interests of the sheep department at the Royal Winter Fair were left in the hands of the representatives to that Fair.

Early last season, with a view to having pure-bred rams placed at the head of many grade flocks throughout the Province, your directors felt that the bonus policy of the Dominion Live Stock Branch should be given more publicity than has hitherto been done.

With this in mind, every breeder of pure-bred sheep in the Province was sent by this association a booklet containing the rules and regulations covering this bonus. Breeders were asked to make this bonus policy known to men who were using grade rams and to assist in replacing grade rams with pure breds. The assistance of agricultural representatives was also solicited, as was also that of farmers' clubs, junior farmers' organizations and other interested parties.

A prize of a registered bred ewe was offered to every agricultural representative in whose county 20 or more men were qualifying for the bonus for the first time in 1922. This ewe was to be offered as a prize to the high man of the sheep section in a County live stock judging competition. This Association will not be called upon to donate many ewes, but our report shows what concentrated effort will do in this regard. In Grey County, where much work with the sheep men is being done by T. S. Cooper, agricultural representative, and other Government fieldmen, there are 79 men applying for the Dominion Government bonus by having purchased their first pure-bred ram in the fall of 1922.

The following is an account by counties of the application for bonus under the Dominion Government Bonus Policy on use of Pure-bred Rams in 1922.

| County | Number qualified and paid | Number applied but not yet qualified | Total applications for bonus |
|---|---|---|---|
| Algoma | 6 | 8 | 14 |
| Brant | 1 | 4 | 5 |
| Bruce | 11 | 3 | 14 |
| Dufferin | 14 | 9 | 23 |
| Durham | 5 | 3 | 8 |
| Essex | ..... | 1 | 1 |
| Elgin | 2 | 3 | 5 |
| Frontenac | 1 | ..... | 1 |
| Grey | 52 | 27 | 79 |
| Haldimand | 1 | ..... | 1 |
| Huron | ..... | 1 | 1 |
| Hastings | 2 | 1 | 3 |
| Halton | ..... | 2 | 2 |
| Lambton | 1 | 1 | 2 |
| Lanark | 3 | 5 | 8 |
| Leeds | 1 | ..... | 1 |
| Lennox | 2 | 1 | 3 |
| Lincoln | ..... | 1 | 1 |
| Muskoka | 1 | 3 | 4 |
| Norfolk | 1 | 1 | 2 |
| Ontario | ..... | 1 | 1 |
| Oxford | 1 | ..... | 1 |
| Parry Sound | ..... | 1 | 1 |
| Peel | 3 | 2 | 5 |
| Perth | ..... | 1 | 1 |
| Renfrew | 1 | 4 | 5 |
| Simcoe | 1 | 1 | 2 |
| Victoria and Haliburton | 1 | ..... | 1 |
| Wellington | 2 | 7 | 9 |
| Wentworth | 1 | ..... | 1 |
| Waterloo | ..... | 1 | 1 |
| York | 3 | 3 | 6 |
| Prince Edward | ..... | 2 | 2 |
| | 117 | 97 | 214 |

There have been in addition several applications from men who have not had the required number of ewes.

| | | |
|---|---|---|
| J. S. Hunter | Emo, Ont | Oxford. |
| (Wanted number reduced to ten.) | | |
| M. J. Kehoe | Bolton, Ont | Cotswold. |
| D. E. McEwen | London, R.R. 4 | Southdown. |
| Chas. J. Shore | Glenworth | Cotswold. |
| Miss Charlotte Smith | Clandeboye, R.R. 1 | Leicester. |
| Geo. Strain | Gore Bay | |
| A. and W. Whitelaw | Guelph | Leicester. |
| James Bowman | Guelph | Suffolk. |
| Cecil Stobbs | Leamington | Southdown. |
| G. H. Mark & Son | Little Britain | Cotswold. |
| Stanley Gardhouse | Weston | Lincoln. |
| Jno. R. Kelsey | Woodville | Shropshire. |
| Geo. L. Telfer | Paris | Hampshire. |
| J. D. Brien | Ridgetown | |
| David Kelly | Shakespeare | Hampshire. |

## SHEEP EXHIBIT AT CHICAGO

This association during the past year took advantage of the assistance offered by the Ontario Department of Agriculture through the Live Stock Branch in making a provincial exhibit of sheep at Chicago. Five cars of sheep were sent by this association under the following conditions of assistance:

1. Any association desiring to make an exhibit shall first apply to the Minister of Agriculture for approval.

2. Assistance shall be limited to breeding stock, and all animals selected for exhibition shall be subject to the approval of the Minister of Agriculture before being shipped.

3. Assistance shall be granted only where exhibits are forwarded in carload lots.

4. Exhibitors securing assistance under these regulations shall be required to display prominently on each stall, pen, or as may be otherwise required by the Department, such cards or banners as may be supplied by the Department in order to emphasize the Provincial character of the exhibit.

5. Attendants in charge of animals when same are being judged or paraded shall wear uniforms supplied by the Department.

6. Where these conditions have been complied with, the Department of Agriculture will make payments to the aforementioned associations on the following basis:

(a) Cost of freight transportation from assembly point by most direct route to place of exhibition.

(b) Cost of transportation of man in charge of each class of stock on behalf of the association.

(c) Cost of transportation of such other attendants as may be approved by the Department.

(d) Cost of express transportation of horses in such exceptional cases as may be approved prior to the shipment.

(e) The sum of $20 for fitting up the exhibition car.

The winnings of the sheep shown were highly satisfactory, and in addition Col. Robt. McEwen of London, succeeded in carrying off premier honours by having the Grand Champion carload of lambs and the Grand Champion wether of the show.

Your directors feel that the members of this association should send by resolution a vote of thanks to the Honourable the Minister of Agriculture of the Province for the financial assistance given by his department in making this exhibit such a success.

### Finances.

The financial condition of the association is sound, as shown by the financial statement. During the year, $4,000 was invested in Victory Bonds. This makes a total of $6,000 invested in Victory Bonds, which are yielding approximately 5½%. In addition we have $5,680 invested in the Canadian Co-Operative Wool Growers which has been yielding for 1922, 8%. Our income is for the present limited to our returns on investments, bank balances, and agreement with the Canadian Co-Operative Wool Growers as before mentioned. The ordinary source of revenue, the Canadian Sheep Breeders' Association, has for the past few years been of no financial benefit. The return of any money from the Canadian Sheep Breeders' Association for this year will depend upon their financial condition.

This report is respectfully submitted for your approval.

W. Whitelaw,
*President.*

L. E. O'Neill,
*Secretary.*

## PRESIDENT'S ADDRESS.

W. Whitelaw, Guelph.

I would like to speak for a few minutes on the sheep industry of our country, both from a financial and exhibition standpoint. We have no reason to feel but optimistic about our industry. Take the Canadian National Exhibition. The large building there was filled to capacity. The London Fair had an exceptionally heavy entry. At the Royal Winter Fair, I suppose the greatest sheep show ever held in the Dominion of Canada was staged. The same building was used as at the Fall Show; it was filled to capacity again, with sheep in the alley ways. To hold a show there in November is a different proposition than in September, and we should thank the Superintendents, Messrs. Brien and Harding, for doing all they could to make things as comfortable as possible. After that show the Chicago Show came on, and a number availed themselves of the assistance given by the Department in paying transportation to and from the show. The Canadian sheep men carried off a great many championships there, and best of all Col. McEwen carried off the prizes for the grand champion wether and the grand champion carload lot. I have no doubt that Col. McEwen and Sons feel very proud of that. They have every reason to be. And we are proud of it. The Winter Fair at Guelph was crowded to the limit. I suppose the Ottawa Fall Fair was up to the mark, and for the Winter Fair they had as good a show as ever. If we are to maintain the high standard that we have set up we have to do something, because we are just at the parting of the ways. We must go across the pond and get some fresh blood. The ports have been closed against us for a number of years, but I believe they are now open from Scotland, and I have no doubt that we will import some fresh blood this year.

I want to give you an illustration of what can be done. A neighbour of mine last year bought six ewe lambs and two bred ewes; the ewes had four lambs. He wethered them all, and about two weeks before the Royal Show, he thought to himself, "I believe they are fit to go there," and with that end in view he shut them in. That is all the grain they saw two weeks before the Royal came on. He took them to the Royal and to Guelph and showed them and then he sold them. These lambs netted him $147; he paid the taxes on the farm and had $7 to the good. He said he never touched anything in live stock that paid him just as well as that. The greatest lack that I see is knowledge on the part of the average farmer of sheep management. If this industry were taken as seriously as the raising of hogs for the bacon trade, and the management of dairy herds for milk, it would not be long before the farmers were as familiar with the conditions for the successful raising of sheep as they are with keeping of hogs and cows. With this knowledge and a proper appreciation of the sheep as a profitable farm animal, viewing it from the standpoint of economical production of wool and mutton, and also from its ability in enriching and cleaning farms, it would not be long before it would be one of the chief sources of agricultural revenue, as it is in England and Scotland.

I have come to the end of my term as President of this Association. Two years ago the Directors honoured me by electing me President. I know that I have not done all the things that I should have done. I wish to thank them for their kindness, and also the Secretary, for the great help they have been to me in the two years I have had office. My only hope is that this Association will continue to do as good work in the future as it has done in the past.

## NOTICE OF MOTION.

Moved by Mr. Brien, seconded by Mr. Harding, "That the Director of the Live Stock Branch of the Ontario Department of Agriculture be a Director of the Ontario Sheep Breeders' Association by virtue of his office." Carried.

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## ADDRESS.

PROF. WADE TOOLE, O.A.C., GUELPH.

There is one thing in the President's address that you should carefully consider, and that is the getting into this country of more good rams. It is just about as hard to get a good pure-bred ram for a high-class flock as it is to get a good pure-bred bull or boar. We have heard a good deal about pure-bred bull business, and when we have outstanding flocks in our country we must look outside to get something better. I would like to see something done in the way of bringing in a number of high-class pure-bred rams for use in the best flocks. The time is ripe for a little boosting in the sheep business. There is absolutely no question about it that sheep and lamb at the price they are bringing will pay just about as well as anything in live stock work, and the people should be told about it. In our work at the Agricultural College we find that only a small percentage of the students in the regular and short courses know anything about sheep from practical experience on the farm. I believe that on a mixed farm in Ontario sheep have a place, and there are thousands of farms in this Province on which there are no sheep and on which a small flock would be profitable.

Numbers are not the only thing we must pay more attention to quality. As far as the commercial product is concerned, we must learn to market it at the right time and in the right way. If we hold our lambs until they are too heavy they are not quite as desirable as they are if sold when lighter. The sheep business, so far as the live stock farm is concerned, is one of the best branches, and in a Province like Ontario we are absolutely justified in doing everything we can to promote the sheep industry.

We maintain, for class-room purposes, nine breeds of sheep, practically every breed that is common in the Province. We only have two breeds in our own breeding flock, for the reason that we have a limited area and cannot handle more than that. I want to thank the breeders for their co-operation, because I have never yet asked sheep men for the loan of some sheep that I did not get them. We winter them and send them back in the spring, and we are glad to do that, and any time any sheep breeder would like something put in the College on that basis we will be glad to co-operate. It is that kind of co-operation that gives us satisfaction, and it helps to do something for the sheep industry. We are running an experiment in fattening lambs to determine whether it pays to fatten them after they attain a certain weight, and we are comparing results of wethers, ewes and ram lambs. I expect the final results will be ready for use about next fall. I am glad to know that sheep breeders are taking up the work and are going to do a little more boosting in regard to the sheep industry. The sheep has been looked upon as a sort of lowly animal, but when you see lambs weighing 100 pounds selling for $14 and $15, and good milk is selling at less than $2 a hundred, and beef at 8c. a pound, I think you will agree that sheep have a distinct place in the agriculture of Ontario.

## ADDRESS.

W. H. J. Tisdale, Assistant Manager, Canadian Co-Operative Wool Growers.

It is a pleasure to appear before such a large gathering as you have to-day. I always welcome an opportunity of meeting any of the sheep men, and doing anything I can to explain the details of the wool market.

There are three things that I would like to stress this morning. The first is the amount of wool handled in Ontario during the past year, the second the grading, and the third the marketing.

During the past year our organization has handled a little better than one million pounds of Ontario wool, but it was not all consigned. About 615,000 pounds were consigned, the rest of it came to us through sources other than farmers, and one of the ways was through purchase. 400,000 pounds of wool was purchased through dealers and was sold at a profit. We might have to buy from dealers next year. It is not co-operation, but something had to be done to more or less safeguard the organization and make it possible for it to continue in the work.

Going back to 1917 when the work was first started, and up to the present time, the man who shipped every year is the man who comes into our office and says, "I am absolutely satisfied," that is because he knows that if something happened in 1921 over which we had no particular control he made up for it in 1922, and he more than made up for it back in 1918-19. That is the point I want to drive home; that over a given period of four or five years it pays well to ship to our organization. As you know, the Live Stock Branch have been co-operating with our organization and a grading policy has been gradually worked out and improved upon from year to year. Most of you are pure-bred breeders, and something perhaps can be said as to the ideal grade or class of wool that can be kept in mind as typical of any breed we are raising. The Southdown is a short, fine wool, and it should be what is classified as fine medium clothing with some fine medium combing. You must keep in mind working towards the upper grade and you should select your rams with that in mind. The Shropshire should be a medium combing or in the American term three-eighths staple; a good long strong staple wool that is reasonably fine with some fleeces in the grade below but keeping all the time your ideal toward that upper grade. Hampshires should be medium combing with some down in the next grade. Oxford, for the most part, will be low medium combing. The Suffolks will be medium combing and medium clothing. We have looked upon the Leicesters as a coarse wool sheep, but in the matter of actual grading I do not think it should be coarse, certainly not in shearlings and two-year-olds. Cotswold and Lincolns are considered coarse or, in the American term, common.

As to the present market and what we may reasonably expect for wool this year, I do not want to pose as a prophet. There are certain factors that indicate a very healthy condition, one of the most healthy conditions in the wool trade that we have had for three or four years. The outstanding feature that helps to make that market healthy for the present year is the fact that wool consumption to-day in the countries that are consuming wool, more particularly England and the United States, is exceeding to a very large extent the wool production over the world.

Another interesting point is that wools are divided into two main classes, merinos or fine wools and cross breds. The merino wool comes chiefly out of

the fine wool countries, and is in two grades, finest and fine medium. The production of these two grades of wool has decreased more than the production of any other grade, and at the same time the public demand has kept up, so that to-day there is hardly a pound of merino wool to be had anywhere, with the result that the mills have had to turn towards these lower grades or cross breds. What is a cross bred? It is a wool very similar to the average run of wool grown in Ontario, or for the most part in Canada. We do not call our wool cross bred, but we compete with the cross bred wools of practically the same character and grade.

What about the price? Ontario coarse wool to-day would sell for from 18 cents to 20 cents a pound, and typical Leicester wool would sell from 21 or 22 cents to 23 cents. Low medium combing or typical Oxford wool is worth to-day in the neighbourhood of 30 cents or probably better. Shropshire or Hampshire is worth 33 cents or 34 cents per pound, and fine medium or Southdown would be worth somewhere between 35 cents and 38 cents. We do not look for any reduction in the price of wool, although it may happen.

## NEW BUSINESS.

GEO. L. TELFER: The matter of getting new blood for our flocks has been touched on by nearly every speaker at this meeting. That same matter was taken up by the old Board of Directors, and we have now appointed a Committee to look into it and to make some suggestions to help us out in the matter. We have been told of the very great advances in the lamb trade and that has been helped along by this Association and the Live Stock Branches of the Federal and Provincial Governments. There has been so much trouble in getting imported sheep that we are simply up against it for the want of new blood. I believe nothing could be done that would benefit this country more than to help the producers who are struggling along trying to produce the best live stock. The Ontario breeders are anxious to keep up the good record they have had in the past. We have had men who have gone all over this continent and brought back laurels to the Province of Ontario. There are also good men coming from the West taking prizes at the Royal Winter Fair. Something should be done to assist in the importation of rams to head our pure-bred flocks, because as soon as our pure-bred flocks are improved other flocks of the country will also improve; therefore, I think something should be done to assist materially in bringing better rams into this country. We must do this because heretofore we have had an enviable reputation, and we must go forward and it must be done this year. I was very glad to hear Prof. Toole speak along this line. He recognized that in order to produce good mutton and lamb we must have a very high class of pure-bred animals. I have a few ideas that I would table for the Committee and place before this meeting. Last night a Committee was appointed and we had the honour of looking into the matter and this is the result. First, pure-bred breeders feel that new blood is needed for the general improvement of flocks, and that a better selection and a considerable saving can be effected by having the requirements of the various breeders selected and shipped as one consignment. In view of the present high prices for pure-breds, and in view of the very considerable expense of transportation, it is recommended that the Dominion Department of Agriculture and the Provincial Department of Agriculture be asked to bear half the expense respectively, to supply a purchasing agent. That is probably one of our hardest

propositions, because everyone has probably a different idea of what his neighbour requires. I am sure we could decide on someone in whom we could place sufficient confidence and would see that we got the very best kind of the different breeds we require. Second, to bear all transportation costs.

Third, then comes our recommendation which probably you may not agree with, and that is a premium of $50 to everyone who will buy a pure-bred ram at from $200 to $250. We feel that in all probability it will cost that or more. We estimate these rams can be bought for somewhere around $250. In recommending this to the Live Stock Branch of our different Governments I feel sure that they will be willing to undertake the work. In conversation last night with several of the branch heads, and from what we can gather, we think we will get this assistance. I do not think this will be considered as being pap fed, and we are not anxious to be considered in that way, but I think an expenditure of a few thousand dollars by the different departments of agriculture would be of very great advantage to this country. We have everything to make a great country so far as live stock is concerned, good roads are being built and that will bring trade to the Canadian breeders, and all things point to the fact that Ontario and the west will benefit largely by having the very best sires that can be secured. We have an organization that could work out this scheme for the benefit of the country. This meeting might ratify the Committee that has already been appointed to deal with this matter.

Mr. Follett: I have been sitting still for a long time waiting for this matter to come up, and I am sure the Ontario breeders should be pleased to have it brought up by Mr. Telfer. I think we in the west need it more than you do in Ontario, because the breeding stock in the west is exhausted. We have to come to Ontario for pure-bred sires, and we have done that for quite a number of years. We have been trying to get stock from the other side, but as you know the foot-and-mouth disease has been a great drawback. You hold your ram sales in our very busy season out West. Last year I was asked to come down and make several purchases, but we were too busy harvesting and I could not get away. North of Winnipeg the Live Stock Department made an investigation, and they found between two and three thousand head of sheep, and there were only two pure-bred rams in the country. That was a great drawback not for the sheep industry alone but also for the men who were raising these sheep. The majority of these men were Icelanders, and they require instruction as to the best breeds of sheep. The Department of Agriculture at Ottawa should be congratulated for taking steps in the right directions. Oxfords and Shropshires are demanding extra good prices. If the breeders of the west want to get the very best rams that you have here you should appoint a Committee so that our Association could write to that Committee and ask them to send rams, and then they would be sure that they were getting first-class animals.

The meeting then adjourned.

# ONTARIO POULTRY ASSOCIATION

The annual meeting of this Association was held in Guelph, at 8.00 p.m., Friday, December 8th, 1922.

## OFFICERS

*President*.....Thos. Simpson, Guelph
*First Vice-President*.....R. Oke, London.
*Second Vice-President*.....Wm. Roberts, Hamilton
*Executive Committee*.....Thos. Simpson, R. Oke, Wm. Roberts, J. E. Rettie.
*Secretary-Treasurer*.....J. E. Rettie.

## Directors

A. W. Tyson, Guelph.
R. Oke, London.
Wm. McNeil, London.
Geo. Robertson, Ottawa.
J. S. Greenshields, Toronto.
Prof. W. R. Graham, O.A.C., Guelph.
W. Carter, Londesboro.
Thos. Simpson, Guelph.
G. G. Henderson, Hamilton.
A. E. Field-Marshall, Beamsville.
Wm. Roberts, Hamilton.
J. W. Clark, Cainsville.
J. H. Saunders, London.

## Representatives to Fair Boards.

*Canadian National Exhibition:* Wm. McNeil, London.
*Central Canada Exhibition:* G. G. Henderson, Hamilton.
*Eastern Canada Live Stock Union:* J. H. Saunders, London.
*Ontario Provincial Winter Fair:* Wm. McNeil, London; J. H. Saunders, London; Thos. Simpson, Guelph; A. W. Tyson, Guelph.
*Royal Agricultural Winter Fair:* Thos. Simpson, Guelph; J. W. Clark, Cainsville; A. E. Field-Marshall, Beamsville.

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## FINANCIAL STATEMENT

Of the Ontario Poultry Association for the year ending December 1st, 1922.

### Receipts

| | | |
|---|---|---|
| Cash on hand as per last report | $634 93 | |
| Membership Fees, 1921-22 | 71 85 | |
| Membership Fees, 1922-23 | 440 00 | |
| Total | | $1,146 78 |

### Expenditures

| | | |
|---|---|---|
| Directors' Expenses | $264 30 | |
| Office Help | 225 00 | |
| Poultry Specials | 159 50 | |
| Membership, Eastern Canada Live Stock Union | 25 00 | |
| Auditor | 2 50 | |
| Cash on hand | 470 48 | |
| Total | | $1,146 78 |

J. S. Greenshields,
*President.*

J. E. Rettie,
*Secretary-Treasurer.*

BUREAU OF MUNICIPAL AFFAIRS

# REPORT RE HOUSING

## FOR 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

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1923

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To His Honour Henry Cockshutt,
*Lieutenant-Governor of the Province of Ontario.*

May it Please Your Honour:

I herewith beg to present for your consideration the report re Housing of The Bureau of Municipal Affairs for 1922.

Respectfully submitted,

H. C. Nixon,
*Provincial Secretary.*

To the Honourable H. C. Nixon,
*Provincial Secretary of the Province of Ontario.*

Sir,—I have the honour to submit for your approval the Report re Housing of The Bureau of Municipal Affairs, for 1922.

I have the honour to be,

Sir,

Your obedient Servant,

J. A. Ellis,
*Director of the Bureau of Municipal Affairs.*

# REPORT OF DIRECTOR.

This report deals with the work which has been done under The Ontario Housing Act of 1919, in the year 1922, and with the work which has been done under The Municipal Housing Act of 1920 in 1922.

*Appropriations.*

The amount advanced by the Dominion Government to the Province for housing purposes was $8,750,000. $8,283,040.99 has been advanced by the Province to various municipalities and a number of payments are yet to be made by the Province to a few of these municipalities which will account for the difference in the amount actually borrowed from the Dominion Government to that which has been advanced by the Province to the various municipalities. In addition $400,000 was by II Geo. V, Chapter 36, agreed to be loaned by the Province to the Town of Kapuskasing for housing purposes under The Ontario Housing Act, 1919, and legislation is now before the House to provide for other advances under this Act being made to the Town of Haileybury, the Town of Charlton, and the Township of Bucke. This will necessitate the borrowing of a further sum of about $500,000. from the Dominion Government, in addition to the $8,750,000. already borrowed.

*Loans.*

Up to December 31st, 1922, advances amounting to $8,283,040.99 were made under the provisions of The Ontario Housing Act, 1919, to 74 municipalities. $4,287,887.25 was advanced to 17 cities, $2,764,676.48 was advanced to 35 towns, $357,329.00 was advanced to 14 villages, $873,148.26 was advanced to 8 townships.

*Repayments by Municipalities.*

Up to the end of 1922, there has been repaid to the Provincial Treasurer on account of monthly repayments $1,217,010.54 of which $432,802.94 is principal, and $784,207.60 is interest. There has also been repaid to the Provincial Treasurer the sum of $298,915.21 on account of loans in excess of monthly repayments. Up to the same date the Provincial Treasurer has also received $177,690.46 for interest on money advanced on progress estimates during construction. The total amount received is $1,693,616.21.

*Arrears.*

There are only two municipalities in arrears, and steps are being taken to collect these arrears. It is expected that they will be collected shortly.

The monthly repayments are as a rule remitted promptly on the first of each month.

*Houses Erected.*

A summary of the houses erected in the years 1919, 1920, 1921 and 1922 under The Ontario Housing Act, 1919, is as follows:—

| No. of Houses | | Loans | Average loan per house |
|---|---|---|---|
| | | $ c. | $ c. |
| 79 | Four roomed, frame clapboard finish | 244,537 00 | 3,095 41 |
| 3 | " solid brick, hollow tile or concrete | 7,575 00 | 2,525 00 |
| 125 | Five roomed, frame clapboard finish | 377,605 00 | 3,020 84 |
| 51 | " frame stucco finish | 169,650 00 | 3,326 47 |
| 70 | " brick veneer | 229,520 00 | 3,278 86 |
| 101 | " solid brick, hollow tile, or concrete | 337,220 00 | 3,328 91 |
| 352 | Six roomed, frame clapboard finish | 1,042,501 00 | 2,961 65 |
| 151 | " frame stucco finish | 502,703 00 | 3,329 15 |
| 449 | " brick veneer | 1,459,889 00 | 3,251 42 |
| 714 | " solid brick, hollow tile or concrete | 2,734,779 00 | 3,830 22 |
| 21 | Over six rooms, frame clapboard finish | 62,500 00 | 2,976 19 |
| 30 | " frame stucco finish | 90,500 00 | 3,016 67 |
| 35 | " brick veneer | 99,225 00 | 2,835 00 |
| 135 | " solid brick, hollow tile or concrete | 519,797 00 | 3,850 35 |
| 2316 | | $7,878,001 00 | $3,401 55 |
| | In addition to the above loans were made in 17 municipalities for the purchase of land amounting to | 256,374 08 | |
| | Increases were also made in loans amounting to | 104,136 40 | |
| | | $8,238,511 48 | |

Of the above 2,080 are detached houses and 190 are semi-detached, 30 are in groups of 3, and 16 are of the 4 units type.

100 six-roomed, brick veneer, houses were erected by the Town of Walkerville and financed largely under the Municipal Housing Act, 1920. However, $130,000 was advanced by the Province in connection with these houses under the provisions of The Ontario Housing Act, 1919.

A summary of the houses erected in the years 1920, 1921, and 1922, under The Municipal Housing Act, 1920, is as follows:—

| No. of Houses | | Loans | Average loan per house |
|---|---|---|---|
| | | $ c. | $ c. |
| 9 | Four roomed, frame clapboard finish | 23,500 00 | 2,616 67 |
| 30 | " frame clapboard finish | 99,781 00 | 3,326 03 |
| 34 | " brick veneer | 132,530 00 | 3,897 94 |
| 71 | " solid brick, hollow tile or concrete | 31,500 00 | 4,436 62 |
| 85 | Six roomed, frame clapboard finish | 292,958 66 | 3,446 57 |
| 4 | " frame, stucco finish | 14,000 00 | 3,500 00 |
| 100 | " brick veneer | 393,900 00 | 3,939 00 |
| 285 | " solid brick, hollow tile or concrete | 1,209,200 00 | 4,242 81 |
| 6 | Over six rooms, frame clapboard finish | 17,500 00 | 2,916 67 |
| 1 | " frame stucco finish | 4,000 00 | 4,000 00 |
| 16 | " brick veneer | 58,500 00 | 3,656 25 |
| 20 | " solid brick, hollow tile or concrete | 86,500 00 | 4,325 00 |
| 661 | | $2,363,869 66 | $3,576 20 |

All the above houses are detached.

It will be noticed that $2,363,869.66 has actually been used for the erection of the above houses, whereas bonds have been guaranteed for 16 municipalities amounting to $2,623,455.99. The balance is for houses which are in the course of erection. $1,585,659.99 was guaranteed in 5 cities, $903,600.00 was guaranteed in 7 towns, $34,196.00 was guaranteed in 3 villages, and $100,000.00 was guaranteed in 1 township.

## Summary.

It will be seen that over 68 per cent. of all the houses erected in 1919, 1920, 1921, and 1922 were either of brick veneer or of solid construction.

The total number of houses erected in these years is 2,977, and the loans made therefor amount to $10,602,381.14. In 1922 alone, 206 houses were erected, and the loans made therefor amount to $762,221.00.

Municipalities which have come under the provisions of "The Ontario Housing Act, 1919."

| | Amount appropriated | Amount actually paid by Province in 1919, 1920, 1921, and 1922 |
|---|---|---|
| Cities | $ c. | $ c. |
| Belleville | 25,000 00 | 19,300 00 |
| Brantford | 250,000 00 | 246,513 00 |
| Chatham | ..... .. | ..... .. |
| Fort William | 250,000 00 | 36,200 00 |
| Galt | 200,000 00 | 39,305 00 |
| Guelph | 250,000 00 | 250,000 00 |
| Hamilton | 500,000 00 | 497,100 00 |
| Kitchener | ..... .. | ..... .. |
| London | 400,000 00 | 398,364 00 |
| Niagara Falls | 300,000 00 | 290,914 00 |
| Ottawa | 750,000 00 | 749,910 00 |
| Peterborough | ..... .. | ..... .. |
| Port Arthur | 150,000 00 | 16,779 68 |
| Sarnia | 100,000 00 | 97,000 00 |
| Sault Ste. Marie | 200,000 00 | 199,050 00 |
| St. Catharines | 150,000 00 | 150,714 00 |
| Stratford | 250,000 00 | 130,400 00 |
| Welland | 250,000 00 | 141,004 00 |
| Windsor | 1,000,000 00 | 925,983 57 |
| Woodstock | 100,000 00 | 99,350 00 |
| | $5,125,000 00 | $4,287,887 25 |
| Towns | | |
| Arthur | 25,000 00 | ..... .. |
| Brampton | 100,000 00 | 66,007 00 |
| Brockville | ..... .. | ..... .. |
| Bridgeburg | 50,000 00 | ..... .. |
| Burlington | ..... .. | ..... .. |
| Capreol | 41,000 00 | 41,000 00 |
| Carleton Place | 30,000 00 | ..... .. |
| Chapleau | ..... .. | ..... .. |
| Cobourg | ..... .. | ..... .. |
| Cochrane | 75,000 00 | 75,000 00 |
| Englehart | 8,000 00 | 8,000 00 |
| Ford City | 150,000 00 | 141,200 00 |
| Fort Frances | 4,000 00 | 4,000 00 |
| Goderich | 100,000 00 | 5,250 00 |
| Gravenhurst | ..... .. | ..... .. |
| Haileybury | ..... .. | ..... .. |
| Hawkesbury | 150,000 00 | 130,000 00 |

| | Amount appropriated | Amount actually paid by Province in 1919, 1920, 1921, and 1922 |
|---|---|---|
| Towns.—Continued | $ c. | $ c. |
| Hespeler | 50,000 00 | ..... .. |
| Kapuskasing | 400,000 00 | 59,703 21 |
| Ingersoll | 75,000 00 | 36,950 00 |
| Iroquois Falls | 150,000 00 | 150,000 00 |
| Leamington | 50,000 00 | 41,690 00 |
| Leaside | 100,000 00 | 99,450 00 |
| Listowel | 50,000 00 | 39,615 00 |
| Merritton | 25,000 00 | 22,500 00 |
| Midland | 75,000 00 | 59,048 00 |
| Milton | 20,000 00 | 16,700 00 |
| Milverton | 50,000 00 | 26,000 00 |
| Mimico | 200,000 00 | 15,800 00 |
| New Toronto | 200,000 00 | 199,564 27 |
| North Bay | ..... .. | ..... .. |
| Niagara | 30,000 00 | ..... .. |
| Oshawa | 600,000 00 | 560,675 00 |
| Owen Sound | ..... .. | ..... .. |
| Palmerston | 50,000 00 | ..... .. |
| Paris | 66,000 00 | 66,000 00 |
| Perth | 25,000 00 | 25,000 00 |
| Port Colborne | 150,000 00 | 149,944 00 |
| Renfrew | 60,000 00 | 12,500 00 |
| Sandwich | 150,000 00 | 146,400 00 |
| Sioux Lookout | 40,000 00 | 12,500 00 |
| Smith's Fal s | 60,000 00 | 23,100 00 |
| Sturgeon Falls | 60,000 00 | 15,600 00 |
| Sudbury | 150,000 00 | 148,530 00 |
| Thoro'd | 50,000 00 | 47,650 00 |
| Timmins | 40,000 00 | 6,000 00 |
| Trenton | 200,000 00 | 16,800 00 |
| Uxbridge | ..... .. | ..... .. |
| Walkerville | 250,000 00 | 246,500 00 |
| Waterloo | ..... .. | ..... .. |
| Whitby | 50,000 00 | 50,000 00 |
| | $4,209,000 00 | $2,764,676 48 |
| Villages | | |
| Acton | 30,000 00 | 1,500 00 |
| Beaverton | 20,000 00 | 13,000 00 |
| Chippawa | 30,000 00 | 22,200 00 |
| Elmira | 40,000 00 | 13,155 00 |
| Fergus | 50,000 00 | 49,800 00 |
| Georgetown | 80,000 00 | 73,250 00 |
| Hensall | ..... .. | ..... .. |
| Humberstone | 50,000 00 | 12,305 00 |
| Madoc | 30,000 00 | ..... .. |
| Point Edward | 30,000 00 | 30,000 00 |
| Port Credit | 100,000 00 | 34,300 00 |
| Port Dalhousie | 50,000 00 | 43,519 00 |
| Port McNicoll | 30,000 00 | 10,100 00 |
| Richmond Hill | 25,000 00 | 25,000 00 |
| Tara | 10,000 00 | 7,500 00 |
| Victoria Harbour | 10,000 00 | ..... .. |
| Woodbridge | 50,000 00 | 21,700 00 |
| | $635,000 00 | $357,329 00 |

| Townships | Amount appropriated $ c. | Amount actually paid by Province in 1919, 1920, 1921, and 1922 $ c. |
|---|---|---|
| Barton | 100,000 00 | 100,903 26 |
| Brantford | 50,000 00 | 34,700 00 |
| Etobicoke | 150,000 00 | 140,700 00 |
| Gloucester | ..... .. | ..... .. |
| Guelph | 50,000 00 | 7,500 00 |
| Neebing | ..... .. | ..... .. |
| Pickering | 30,000 00 | ..... .. |
| Sandwich E | 55,000 00 | 54,975 00 |
| Scarborough | 100,000 00 | 25,800 00 |
| Stamford | 30,000 00 | 29,800 00 |
| Thorold | 30,000 00 | ..... .. |
| West Oxford | 30,000 00 | ..... .. |
| York | 500,000 00 | 478,770 00 |
| | $1,125,000 00 | $873,148 26 |
| Total of | | |
| Cities | 5,125,000 00 | 4,287,887 25 |
| Towns | 4,209,000 00 | 2,764,676 48 |
| Villages | 635,000 00 | 357,329 00 |
| Townships | 1,125,000 00 | 873,148 26 |
| | $11,094,000 00 | $8,283,040 99 |

Municipalities which have come under the provisions of "The Municipal Housing Act, 1920."

| Cities | Amount of bonds guaranteed $ c. |
|---|---|
| Belleville | ..... .. |
| Chatham | ..... .. |
| Kitchener | 135,000 00 |
| London | 300,000 00 |
| Niagara Falls | 75,659 99 |
| Ottawa | ..... .. |
| Peterborough | ..... .. |
| Sarnia | 150,000 00 |
| Sault Ste. Marie | ..... .. |
| Windsor | 925,000 00 |
| | $1,585,659 99 |
| Towns | |
| Cochrane | 75,000 00 |
| Ford City | 250,000 00 |
| Listowel | 25,000 00 |
| Riverside | 50,000 00 |
| Sioux Lookout | ..... .. |
| Sudbury | 150,000 00 |
| Tilbury | 13,600 00 |
| Walkerville | 340,000 00 |
| | $903,600 00 |
| Villages | |
| Beaverton | 7,000 00 |
| Fergus | 10,000 00 |
| Point Edward | 17,196 00 |
| | $34,196 00 |

| | Amount of bonds guaranteed |
|---|---|
| | $ c. |
| Townships | |
| Stamford | $100,000 00 |
| Total of | |
| Cities | $1,585,659 99 |
| Towns | 903,600 00 |
| Villages | 34,196 00 |
| Townships | 100,000 00 |
| | $2,623,455 99 |

The City of Ottawa has issued debentures for $45,000, but has not requested any guarantee of these debentures by the Province.

### Cost of Administration.

The cost to the Province of the administration of The Ontario Housing Acts is as follows:

| | |
|---|---|
| 1919 (7 months) | $20,536 49 |
| 1920 | 28,566 45 |
| 1921 | 19,265 07 |
| 1922: | |
| Salaries and other remuneration | 7,041 74 |
| Contingencies (including travelling expenses) | 3,209 69 |
| | $78,619 44 |

The whole of the work has been performed under the direction of the undersigned.

J. A. Ellis,

*Director, Bureau of Municipal Affairs.*

January 15th, 1923.

---

## COCHRANE.

### Houses Erected.

"The Municipal Housing Act, 1920."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 2 | Four roomed, frame clapboard finish | $5,000 00 |
| 2 | Five roomed, frame clapboard finish | 6,000 00 |
| 1 | Five roomed, brick veneer | 3,300 00 |
| 8 | Six roomed, frame clapboard finish | 25,200 00 |
| 1 | Six roomed, brick veneer | 3,500 00 |
| 4 | Six roomed, solid brick | 16,000 00 |
| 1 | Over six rooms, frame clapboard finish | 3,500 00 |
| 1 | Over six rooms, brick veneer | 3,500 00 |
| 1 | Over six rooms, solid brick | 3,500 00 |
| 21 | | $69,500 00 |

## FORD CITY.

### Houses Erected.

### "The Municipal Housing Act, 1920."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 1 | Five roomed, frame clapboard finish..... | $3,000 00 |
| 2 | Five roomed, brick veneer..... | 8,000 00 |
| 4 | Five roomed, solid brick..... | 14,500 00 |
| 4 | Six roomed, solid brick..... | 18,000 00 |
| 1 | Over six rooms, solid brick..... | 3,500 00 |
| 12 | | $47,000 00 |

---

## HAMILTON.

### Houses Erected.

### "The Ontario Housing Act, 1919."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 3 | Six roomed, solid brick..... | $12,850 00 |

---

## KAPUSKASING.

### Houses Erected.

### "The Ontario Housing Act, 1919."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 28 | Four roomed, frame clapboard finish..... | $91,937 00 |
| 4 | Five roomed, frame clapboard finish..... | 14,000 00 |
| 6 | Six roomed, frame clapboard finish..... | 25,334 00 |
| 1 | Over six rooms, frame clapboard finish..... | 4,000 00 |
| 39 | | $135,271 00 |

The Spruce Falls Housing Corporation is constructing the above houses.

---

## LEAMINGTON.

### Houses Erected.

### "The Ontario Housing Act, 1919."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 1 | Six roomed, frame clapboard finish..... | $3,500 00 |

## LISTOWEL.

### Houses Erected.

### "The Municipal Housing Act, 1920."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 1 | Over six rooms, frame clapboard finish..... | $3,000 00 |
| 4 | Over six rooms, brick veneer..... | 16,000 00 |
| 1 | Over six rooms, solid brick..... | 4,000 00 |
| 6 | | $23,000 00 |

---

## POINT EDWARD.

### Houses Erected.

### "The Municipal Housing Act, 1920."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 1 | Five roomed, frame clapboard finish..... | $3,200 00 |
| 4 | Six roomed, frame clapboard finish..... | 14,000 00 |
| 5 | | $17,200 00 |

---

## RIVERSIDE.

### Houses Erected.

### "The Municipal Housing Act, 1920."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 4 | Five roomed, frame clapboard finish..... | $14,000 00 |
| 1 | Five roomed, brick veneer..... | 3,000 00 |
| 7 | Five roomed, solid brick..... | 31,000 00 |
| 2 | Six roomed, brick veneer..... | 8,000 00 |
| 9 | Six roomed, solid brick..... | 39,500 00 |
| 1 | Over six rooms, frame clapboard finish..... | 2,500 00 |
| 24 | | $98,000 00 |

---

## SANDWICH.

### Houses Erected.

### "The Ontario Housing Act, 1919."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 2 | Five roomed, brick veneer..... | $7,600 00 |
| 1 | Six roomed, brick veneer..... | 4,500 00 |
| 3 | | $12,100 00 |

## SARNIA.

### Houses Erected.

### "The Municipal Housing Act, 1920."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 2 | Five roomed, frame clapboard finish..... | $7,000 00 |
| 12 | Six roomed, frame clapboard finish..... | 42,000 00 |
| 1 | Six roomed, brick veneer..... | 4,000 00 |
| 15 | | $53,000 00 |

---

## SIOUX LOOKOUT.

### Houses Erected.

### "The Ontario Housing Act, 1919."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 3 | Six roomed, brick veneer..... | $9,000 00 |

---

## SIOUX LOOKOUT.

### Houses Erected.

### "The Municipal Housing Act, 1920."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 1 | Six roomed, brick veneer..... | $3,000 00 |

---

## STAMFORD TOWNSHIP.

### Houses Erected.

### "The Municipal Housing Act, 1920."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 1 | Four roomed, frame clapboard finish..... | $2,800 00 |
| 2 | Five roomed, frame clapboard finish..... | 7,000 00 |
| 2 | Five roomed, brick veneer..... | 6,000 00 |
| 3 | Six roomed, frame clapboard finish..... | 10,000 00 |
| 2 | Six roomed, brick veneer..... | 8,000 00 |
| 1 | Over six rooms, frame clapboard finish..... | 2,000 00 |
| 11 | | $35,800 00 |

## STRATFORD.

### Houses Erected.

### "The Ontario Housing Act, 1919."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 4 | Five roomed, brick veneer | $13,600 00 |
| 4 | Six roomed, brick veneer | 13,200 00 |
| 8 | | $26,800 00 |

## WELLAND.

### Houses Erected.

### "The Ontario Housing Act, 1919."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 1 | Six roomed, frame clapboard finish | $3,000 00 |
| 1 | Six roomed, brick veneer | 3,200 00 |
| 2 | Six roomed, solid brick | 8,500 00 |
| 4 | | $14,700 00 |

## WINDSOR.

### Houses Erected.

### "The Ontario Housing Act, 1919."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 16 | Five roomed, solid brick | $64,000 00 |
| 2 | Six roomed, brick veneer | 7,000 00 |
| 22 | Six roomed, solid brick | 87,500 00 |
| 1 | Over six rooms, solid brick | 4,000 00 |
| 41 | | $162,500 00 |

## WINDSOR

### Houses Erected.

### "The Municipal Housing Act, 1920."

| No. of Houses 1922 | | Loans, 1922 |
|---|---|---|
| 1 | Six roomed, frame clapboard finish | $3,500 00 |
| 1 | Six roomed, brick veneer | 4,000 00 |
| 6 | Six roomed, solid brick | 27,000 00 |
| 1 | Over six rooms, solid brick | 4,500 00 |
| 9 | | $39,000 00 |

# Ontario Department of Agriculture

# REPORT

OF THE

# WOMEN'S INSTITUTES

OF THE

## PROVINCE OF ONTARIO

## 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
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1923

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400 Richmond St. W., Toronto

To His Honour Henry Cockshutt,

*Lieutenant-Governor of the Province of Ontario.*

May it Please Your Honour:

The undersigned begs to present for the consideration of your Honour the Reports of the Women's Institutes of Ontario for 1922.

Respectfully submitted,

Manning W. Doherty,
*Minister of Agriculture.*

Toronto, 1923.

# CONTENTS


| | PAGE |
|---|---|
| Announcement of the Superintendent | 5 |
| Statistical Statement, 1921-22 | 8 |
| The Women's Institutes of Ontario: Geo. A. Putnam | 11 |
| How the Ontario Institutes Began | 17 |
| Influence of the Institute on the Home: Mrs. A. E. Walker | 19 |
| Influence of the Institute in Community and National Problems: Mrs. Louis Danard | 23 |
| Influence of the Institute on Education: Mrs. J. B. Mitchell | 24 |
| For Home and Country: Mrs. George Edwards | 26 |
| Eastern Ontario Convention Honoured by Lady Byng | 28 |
| Mrs. Cockshutt Welcomes the Central Ontario Delegates | 28 |
| The Field of the Women's Institutes: Mrs. R. H. Grant | 28 |
| The Work of Rural Women: Mrs. Chas. Macoun | 30 |
| The Benefits of Federation: Mrs. Todd | 32 |
| The Homemaker's Creed: Miss Helen MacDougall | 32 |
| The Ontario Institutes of To-day, and a Forecast of Their To-morrow: Mrs. Laura Rose Stephen | 33 |
| Observations and Conclusions of an Institute Delegate: Dr. Anna Ross | 34 |
| Organizing in New Centres: Mrs. Jos. McLennan | 36 |
| The Branch Institute from a Rural Woman's Viewpoint: Mrs. A. J. Stewart | 37 |
| The Institute and Community Work: Elizabeth Crone | 38 |
| Organized Play in the Country: Mrs. M. J. Nixon | 42 |
| Supervised Play in Community Halls and Public Schools: Mrs. Walker | 43 |
| Education and Better Schools: Mrs. B. O. Allen | 44 |
| Rural Education: Mrs. G. A. Locking | 46 |
| How to Co-operate with the Schools: Mrs. Freeman Campbell | 48 |
| One School's Hot Lunch System: Miss Annie Jamieson | 52 |
| Co-operative and Individual Labour Saving: Mrs. Calvin Blair | 52 |
| Co-operative and Individual Labour Saving: Mrs. C. W. Farran | 55 |
| A Simple Water System for a Farm Home: I. F. Metcalfe | 56 |
| Power Conveniences for the Farm Home: Mary Grant | 57 |
| Save My Baby: Dr. Helen MacMurchy | 58 |
| Raising the Standard of Health in the School and the Community: Mrs. G. R. Bradley | 60 |
| The Institute in Health Education: Annie Jamieson | 62 |
| A Public Health Nursing Survey: Miss Carr-Harris | 63 |
| Medical School Inspection and the School Nurse: Dr. J. T. Phair | 65 |
| Our Girls: Emily J. Guest | 65 |
| Reports from Girls' Institutes | 68 |
| Girls' Judging Competitions: Ethel M. Chapman | 71 |
| When Should a Girls' Institute Be Organized: Annie Jamieson | 72 |
| Income Earning Features for Girls' and Women on the Farm: Emily J. Guest | 73 |
| Some Needs of the Country as Seen in the Court: Dr. Margaret Patterson | 75 |
| Food Problems in Relation to Health: Bertha Duncan | 78 |
| More Milk for Country Children: Helen G. Campbell | 82 |
| Income Earning for Farm Women: Mrs. K. S. Aitken | 83 |
| Beautifying the Country Home: W. T. Macoun | 86 |
| Houses Built for Country Life: Ethel M. Chapman | 89 |
| How the Institutes May Co-operate with the Agricultural Representative | 97 |
| The Institute and the School Fair: I. F. Metcalfe | 100 |
| The Institutes and Library Service: W. O. Carson | 101 |
| Better Movies for Rural Districts: Mrs. Alex. Thompson | 102 |
| An Information Bureau: Mrs. Jean Muldrew | 103 |
| What the Institutes are Doing | 106–119 |
| Reports of Standing Committees, 1922: | |
| Agriculture: Mrs. Ida V. Leggett | 120 |
| Education and Better Schools: Miss K. F. McIntosh | 121 |
| Immigration: Miss E. J. Guest | 122 |
| Publicity: Miss Ethel M. Chapman | 124 |
| Health and Child Welfare: Dr. Margaret Patterson | 125 |
| Home Economics: Miss Olive Cruickshank | 126 |
| Resolutions | 127 |
| Officers of the Federated Women's Institutes of Ontario | 128 |

# WOMEN'S INSTITUTES OF ONTARIO

## 1922

*To the Honourable Minister of Agriculture:*

I have pleasure in presenting herewith the Annual Report of the Women's Institutes Branch for the year ending October the 31st, 1922, which includes proceedings at the conventions and reports from the Institutes, as well as special articles and an outline of Government service. The reports should be of general interest and of special value to the officers in planning and carrying on the work. The accomplishments of the Institutes, as presented herein, will stimulate the interest on the part of the members generally, and should create an interest in this very important field of activity in those centres where organization has not yet taken place.

The work has developed to such proportions that it was found desirable to hold conventions at five points, as follows:

| | |
|---|---|
| Fort Frances | October 11th and 12th. |
| Ottawa | October 24th, 25th and 26th. |
| London | November 7th, 8th and 9th. |
| Toronto | November 21st, 22nd and 23rd. |
| North Bay | October 18th and 19th. |

At these conventions the delegates presented reports on the work done during the year, learned of the services available from outside and of the possibilities through the utilization of local resources and talent, and formulated plans for future work. Instead of reporting the proceedings of the conventions separately it has been thought well to select what is of general interest from each and to tabulate the reports on work done as presented at the conventions or sent direct to the Department, under definite headings.

The activities of the Institutes cover a very wide field, embracing all household and homemaking problems,—Education, Health, Social Life and Moral Standards of the Community, a consideration of Local, Provincial and National affairs, in which the people generally are interested or concerned.

A brief history of the Institutes since their establishment twenty-five years ago, the present status of the work, and the possibilities of the future, as presented at the conventions, will be found on page 00.

I wish to supplement this by a reference to the rapid development in furnishing systematic instruction to the members of the Institutes by means of Short Courses in "Food Values and Cooking," "Home Nursing and First Aid," and "Sewing," which were held as follows during the twelve months ending October the 31st, 1922:

| | Number of Courses | Number in Classes | Class Average |
|---|---|---|---|
| Food values and cooking | 42 | 1845 | 44 |
| Home nursing and first aid | 66 | 2918 | 44 |
| Sewing | 72 | 1075 | 15 |
| Labour-saving devices, etc. | 9 | 331 | 37 |
| | 189 | 6169 | |

Total attendance, 63,860.

The residents of the rural districts are coming to appreciate more and more the value of Demonstration-Lecture Courses, which provide for systematic instruction from day to day, for a period of two weeks usually, and in some instances, for a whole month. The demand for such service is growing rapidly, as is evidenced in the fact that over fifty centres will hold courses during the month of January, 1923. For many years the members of the Women's Institutes have had advantage of occasional lectures, special articles, and the use of books, bulletins and leaflets bearing upon Health, Foods, Clothing, Housing, etc., with the result that they are taking a very intelligent and keen interest in the Short Course work which we aim to make of practical, every-day value to the women of responsibility, and the girls who are desirous of preparing for the duties of later life.

Scene at a Baby Welfare Day arranged by the Dundas Institute.

In addition to providing instructors as above indicated, speakers were furnished for meetings held at 676 places during the Summer Series of 1922, with an attendance of 25,012, besides a number of conventions and district and special meetings from time to time throughout the year.

The attendance record for the year was:

| | |
|---|---|
| Demonstration-lecture courses | 63,860 |
| Conventions | 7,875 |
| Summer series and district annuals | 33,000 |
| Monthly meetings of branches | 187,364 |
| Total attendance | 275,261 |

The following features presented in this volume are worthy of special mention:

Summarized Statement of what the Institutes are doing within the ranks of the membership.

The organization and Work of Girls' Institutes.

The application of Power and Labour-Saving Devices to the Farm Home.

Income Earning Features for Girls and Women on the Farm.

Beautification of the Country Home.

The Reports Presented by the Three First Formed Branches in the Province: Stoney Creek, Kemble and Whitby. The value of the Institute to the Home, to the Community, and to the National Life, are well illustrated in these reports, which reveal the stability of the Institute, and the great possibilities for future work.

"The Field of Women's Institutes."

"The Principles and Possibilities of Co-operative Marketing of Farm Products."

The Federated Women's Institutes of the Province.

The Reports on work done and Programme for future work of Standing Committees on: Publicity, Agriculture, Immigration, Health, Education and Better Schools, Resolutions, Girls' Work.

The strength of the Women's Institutes lies in the fact that localities desiring service in the way of lectures, literature and demonstrations, are advised to form organizations and are required to hold meetings, utilizing local talent. While the service rendered by the Institutes Branch has been of real value and much appreciated, the activities of the women and girls in the local organizations have resulted in gaining much knowledge of practical value in the housing, clothing and feeding of the family, and the introduction of practices making towards health and strength of body and mind, ability to grapple with social, educational and economic problems through the co-operation of the whole people in the best interests of the community.

It has been demonstrated in the work of the Women's Institutes of the Province for the past twenty years, that the value of the service rendered is dependent to a very large extent upon the degree to which the people directly concerned can be induced to put forth effort on their own behalf. For the Government or any organization outside of the community to undertake to perform service for the people without requiring activity and the shouldering of responsibility on their part, is not conducive to the best development of the people concerned, and does not result in a service of lasting worth.

We have in the Institutes of Ontario a form of organization and a method of work which are a very forceful factor in making towards efficiency, prosperity and contentment in the rural districts.

The past year has been one of steady growth and marked progress, and I trust that the Institutes may continue to receive encouragement in their work, and an extended and improved service from not only the Department of Agriculture but other Departments of the Government.

GEO. A. PUTNAM,
*Superintendent.*

## ONTARIO WOMEN'S INSTITUTES, STATISTICAL STATEMENT, 1921-22.

| Institutes. | Membership. | No. of Meetings. | Attendance. | No. Papers and Addresses. | Receipts | | | | | Expenditures. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Balance from 1920-21. | Membership fees. | Grants. | Miscellaneous. | Total. | Expenses for meetings. | Officers' salaries and expenses. | Postage and stationery. | Printing and advertising. | Lecturers' expenses. | Books and periodicals. | Miscellaneous. | Total. | Balance for 1921-22. |
| | | | | | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. |
| Addington | 65 | 15 | 111 | 16 | 29 10 | 16 25 | 25 00 | 1 70 | 72 05 | 1 50 | 5 00 | 2 83 | 6 18 | 2 60 | 2 60 | 17 27 | 37 98 | 34 07 |
| Algoma C | 198 | 57 | 657 | 45 | 442 26 | 54 65 | 43 00 | 511 65 | 1051 56 | 8 00 | 74 06 | 9 28 | 24 25 | 26 00 | 26 37 | 626 06 | 794 02 | 257 54 |
| Algoma, E | 192 | 82 | 952 | 31 | 505 23 | 47 55 | 18 00 | 693 61 | 1264 39 | 11 98 | 60 70 | 12 58 | 15 50 | 5 50 | 4 59 | 972 83 | 1083 68 | 180 71 |
| Algoma, North Shore | 59 | 34 | 303 | 28 | 83 93 | 16 25 | 40 00 | 205 80 | 345 98 | 6 00 | 21 00 | 7 32 | 5 64 | 3 00 | 2 95 | 233 00 | 278 91 | 67 07 |
| Amherst Island | 60 | 12 | 155 | 6 | 28 02 | 14 50 | 25 00 | 105 60 | 173 12 | 6 80 | 32 25 | 2 24 | ..... | ..... | 50 70 | 7 88 | 99 87 | 73 25 |
| Brant, N | 704 | 138 | 4835 | 160 | 718 83 | 176 00 | 113 00 | 2543 22 | 3551 05 | 34 51 | 76 05 | 21 71 | 68 80 | 16 65 | 26 70 | 2297 04 | 2541 46 | 1009 59 |
| Brant, S | 396 | 141 | 3156 | 32 | 650 86 | 91 50 | 107 00 | 1864 92 | 2714 28 | 38 10 | 99 96 | 39 58 | 53 88 | 40 | 3 20 | 1788 40 | 2023 52 | 690 76 |
| Brockville | 198 | 22 | 600 | 14 | 856 33 | 49 50 | 78 00 | 454 55 | 1438 38 | 31 85 | 28 30 | 2 14 | 21 75 | 2 50 | ..... | 227 35 | 313 89 | 1124 49 |
| Bruce, C | 317 | 89 | 2264 | 111 | 108 58 | 79 25 | 88 50 | 1598 02 | 1874 35 | 52 54 | 71 99 | 11 20 | 46 00 | 33 50 | ..... | 1513 01 | 1728 24 | 146 11 |
| Bruce, N | 267 | 106 | 1999 | 94 | 892 43 | 67 00 | 95 00 | 782 07 | 1836 50 | 52 00 | 45 45 | 13 53 | 41 94 | 14 05 | 10 17 | 712 20 | 889 34 | 947 16 |
| Bruce, S | 224 | 61 | 1870 | 63 | 1156 04 | 51 25 | 65 00 | 1502 62 | 2774 91 | 114 37 | 47 15 | 15 12 | 65 80 | 28 45 | 5 00 | 1828 77 | 2104 66 | 670 25 |
| Bruce, W | 294 | 93 | 1685 | 85 | 460 35 | 59 00 | 83 00 | 1196 93 | 1799 28 | 25 27 | 52 00 | 13 12 | 54 10 | 11 45 | 18 49 | 1125 93 | 1300 36 | 498 92 |
| Carleton | 644 | 204 | 3424 | 151 | 874 71 | 146 25 | 223 00 | 2679 26 | 3923 22 | 42 80 | 51 10 | 35 50 | 53 34 | 35 40 | 11 60 | 2324 88 | 2554 62 | 1368 60 |
| Dufferin | 422 | 158 | 3013 | 144 | 1289 06 | 132 00 | 151 00 | 2042 92 | 3614 98 | 101 95 | 95 70 | 31 73 | 131 64 | 13 30 | 17 75 | 2121 63 | 2513 70 | 1101 28 |
| Dundas | 385 | 79 | 1368 | 71 | 1096 16 | 94 35 | 83 00 | 2884 74 | 4158 25 | 91 95 | 79 07 | 16 86 | 80 02 | 6 25 | 96 87 | 2440 68 | 2811 70 | 1346 55 |
| Durham, E | 334 | 78 | 1371 | 37 | 1547 92 | 107 25 | 58 00 | 1184 49 | 2897 66 | 61 85 | 25 75 | 11 41 | 33 90 | 19 80 | 14 11 | 1276 99 | 1443 81 | 1453 85 |
| Durham, W | 355 | 93 | 2494 | 70 | 606 40 | 88 75 | 49 00 | 1321 24 | 2065 39 | 14 79 | 62 25 | 20 75 | 33 26 | 23 50 | 20 00 | 1140 68 | 1315 23 | 750 16 |
| Elgin, E | 475 | 85 | 2519 | 80 | 1444 63 | 70 00 | 83 00 | 1362 88 | 2960 51 | 48 16 | 126 50 | 16 88 | 49 62 | 103 55 | ..... | 1095 49 | 1440 20 | 1520 31 |
| Elgin, W | 362 | 118 | 2403 | 146 | 1994 83 | 90 50 | 120 00 | 1746 98 | 3952 31 | 93 59 | 66 56 | 17 05 | 49 30 | 36 13 | 6 59 | 1466 24 | 1735 46 | 2216 85 |
| Essex, N | 131 | 55 | 1028 | 36 | 344 37 | 37 75 | 65 00 | 647 05 | 1094 17 | 54 10 | 58 72 | 7 27 | 13 25 | 26 00 | ..... | 546 67 | 706 01 | 388 16 |
| Essex, S | 644 | 79 | 2586 | 114 | 686 60 | 158 75 | 77 00 | 1706 33 | 2628 68 | 64 94 | 85 41 | 21 45 | 91 34 | 4 35 | 16 62 | 1504 80 | 1788 91 | 839 77 |
| Frontenac | 159 | 39 | 648 | 17 | 305 59 | 47 00 | 98 85 | 1173 61 | 1625 05 | 331 10 | 6 45 | 13 24 | 19 65 | 8 00 | 20 | 506 46 | 885 10 | 739 95 |
| Glengarry | 190 | 62 | 1340 | 60 | 978 39 | 46 00 | 40 00 | 2267 42 | 3331 81 | 30 08 | 51 85 | 15 98 | 29 70 | 1 00 | 10 00 | 2337 95 | 2476 56 | 855 25 |
| Grenville, S | 181 | 51 | 817 | 26 | 723 48 | 40 00 | 84 00 | 1255 76 | 2103 24 | 49 50 | 36 00 | 12 59 | 21 65 | ..... | ..... | 1527 02 | 1646 76 | 456 48 |
| Grey, C | 492 | 186 | 3270 | 149 | 2273 04 | 121 75 | 140 00 | 2441 23 | 4976 02 | 56 77 | 116 11 | 35 75 | 66 95 | 22 25 | 10 35 | 3542 32 | 3850 50 | 1125 52 |
| Grey, N | 501 | 190 | 3940 | 176 | 438 70 | 136 73 | 125 00 | 1777 83 | 2478 26 | 101 40 | 73 48 | 27 03 | 108 69 | 33 90 | 19 40 | 1606 91 | 1970 81 | 507 45 |
| Grey, S | 377 | 125 | 2883 | 125 | 558 65 | 94 25 | 104 00 | 1172 64 | 1929 54 | 49 05 | 47 33 | 15 77 | 82 70 | 29 00 | 6 13 | 1007 78 | 1237 76 | 691 78 |
| Haldimand | 732 | 243 | 4324 | 262 | 3902 80 | 173 50 | 145 00 | 3874 72 | 8096 02 | 158 85 | 106 10 | 30 62 | 57 47 | 5 50 | 18 99 | 6323 57 | 6701 10 | 1394 92 |
| Haliburton | 90 | 24 | 408 | 31 | 169 97 | 22 50 | 58 00 | 192 43 | 442 90 | 5 00 | 8 00 | 6 06 | 9 21 | 5 75 | ..... | 103 24 | 137 26 | 305 64 |
| Halton | 357 | 108 | 1984 | 49 | 543 81 | 91 50 | 89 00 | 1563 79 | 2288 10 | 24 25 | 125 50 | 32 46 | 50 34 | 13 70 | 6 07 | 1506 43 | 1758 75 | 529 35 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hastings, E. | 140 | 41 | 770 | 41 | 401 | 48 | 35 | 00 | 112 | 00 | 519 | 98 | 1068 | 46 | 49 | 53 | 5 | 00 | 4 | 03 | 23 | 15 | ..... | | 15 | 25 | 578 | 51 | 675 | 47 | 392 | 99 |
| Hastings, N. | 403 | 118 | 1716 | 83 | 1344 | 53 | 100 | 75 | 58 | 00 | 2093 | 59 | 3596 | 87 | 132 | 58 | 99 | 85 | 15 | 73 | 71 | 30 | 9 | 90 | 3 | 30 | 2511 | 78 | 2844 | 44 | 752 | 43 |
| Hastings, W. | 169 | 61 | 1102 | 12 | 558 | 60 | 51 | 50 | 72 | 50 | 557 | 13 | 1239 | 73 | 1 | 00 | 55 | 00 | 8 | 19 | 8 | 50 | 10 | 50 | 2 | 95 | 621 | 66 | 707 | 80 | 531 | 93 |
| Huron, E. | 335 | 131 | 1823 | 138 | 817 | 61 | 70 | 00 | 70 | 00 | 1544 | 31 | 2501 | 92 | 36 | 52 | 58 | 90 | 28 | 74 | 88 | 23 | 60 | 14 | 12 | 21 | 1154 | 99 | 1439 | 73 | 1062 | 19 |
| Huron, S. | 178 | 44 | 1116 | 43 | 346 | 95 | 44 | 50 | 75 | 00 | 894 | 91 | 1361 | 36 | 136 | 29 | 15 | 00 | 4 | 10 | 23 | 96 | 7 | 00 | 12 | 55 | 913 | 58 | 1112 | 48 | 248 | 88 |
| Huron, W. | 244 | 106 | 2518 | 103 | 871 | 25 | 101 | 25 | 64 | 00 | 2346 | 97 | 3383 | 47 | 242 | 61 | 117 | 25 | 10 | 06 | 46 | 43 | 10 | 10 | 1 | 31 | 2731 | 50 | 3159 | 26 | 224 | 21 |
| Kenora. | 227 | 56 | 1168 | 44 | 1231 | 73 | 62 | 75 | 46 | 00 | 958 | 37 | 2298 | 85 | 95 | 62 | 83 | 72 | 26 | 25 | 14 | 25 | 11 | 50 | 6 | 25 | 989 | 71 | 1227 | 30 | 1071 | 55 |
| Kent, E. | 409 | 102 | 2410 | 96 | 674 | 48 | 87 | 27 | 89 | 00 | 2332 | 87 | 3183 | 62 | 47 | 10 | 178 | 70 | 13 | 35 | 89 | 64 | 17 | 00 | 33 | 31 | 1984 | 31 | 2363 | 41 | 820 | 21 |
| Kent, W. | 250 | 105 | 2179 | 73 | 890 | 90 | 77 | 50 | 91 | 00 | 2341 | 01 | 3400 | 41 | 40 | 25 | 70 | 50 | 14 | 47 | 81 | 78 | 3 | 25 | 20 | 45 | 2281 | 51 | 2512 | 21 | 888 | 20 |
| Lambton, E. | 430 | 136 | 2728 | 132 | 1571 | 46 | 105 | 00 | 235 | 00 | 2918 | 47 | 4829 | 93 | 81 | 49 | 54 | 00 | 25 | 96 | 20 | 22 | 17 | 13 | 22 | 45 | 2043 | 46 | 2264 | 71 | 2565 | 22 |
| Lambton, W. | 441 | 146 | 2568 | 268 | 1643 | 46 | 118 | 00 | 117 | 00 | 1992 | 81 | 3871 | 27 | 96 | 60 | 83 | 45 | 24 | 01 | 59 | 98 | 33 | 70 | 4 | 75 | 1747 | 52 | 2050 | 01 | 1821 | 26 |
| Lanark, N. | 247 | 87 | 1249 | 35 | 788 | 59 | 62 | 65 | 167 | 50 | 1255 | 40 | 2274 | 14 | 29 | 52 | 10 | 00 | 14 | 86 | 58 | 45 | 5 | 50 | 17 | 85 | 1295 | 71 | 1431 | 89 | 842 | 25 |
| Lanark, S. | 289 | 92 | 1302 | 49 | 680 | 12 | 71 | 50 | 94 | 00 | 1079 | 80 | 1925 | 42 | 179 | 36 | 91 | 80 | 16 | 65 | 62 | 54 | 37 | 50 | 2 | 00 | 992 | 87 | 1382 | 72 | 542 | 70 |
| Leeds, N., & Grenville. | 267 | 56 | 1173 | 33 | 798 | 79 | 66 | 75 | 65 | 00 | 1498 | 45 | 2428 | 99 | 21 | 00 | 15 | 00 | 10 | 24 | 75 | 61 | 2 | 90 | 4 | 05 | 1740 | 23 | 1869 | 03 | 559 | 96 |
| Leeds, S. | 435 | 141 | 2604 | 91 | 1307 | 17 | 109 | 50 | 113 | 00 | 2049 | 96 | 3579 | 63 | 50 | 32 | 97 | 02 | 22 | 84 | 44 | 79 | 17 | 72 | 1 | 80 | 2303 | 84 | 2538 | 33 | 1041 | 30 |
| Lennox. | 255 | 50 | 1149 | 37 | 197 | 94 | 63 | 75 | 140 | 00 | 441 | 94 | 843 | 63 | 16 | 35 | 35 | 00 | 10 | 77 | 24 | 70 | 7 | 95 | 1 | 00 | 466 | 46 | 562 | 23 | 281 | 40 |
| Lincoln. | 758 | 173 | 4792 | 130 | 1273 | 03 | 183 | 75 | 106 | 00 | 2962 | 43 | 4525 | 21 | 91 | 43 | 187 | 55 | 43 | 22 | 62 | 75 | 13 | 25 | 12 | 05 | 2856 | 84 | 3267 | 09 | 1258 | 12 |
| Manitoulin, E. | 204 | 114 | 1797 | 216 | 707 | 19 | 55 | 00 | 82 | 00 | 1254 | 84 | 2099 | 03 | 11 | 00 | 51 | 00 | 24 | 42 | 3 | 25 | 17 | 50 | 5 | 15 | 1211 | 31 | 1323 | 63 | 775 | 40 |
| Manitoulin, W. | 86 | 62 | 611 | 55 | 399 | 01 | 21 | 50 | 46 | 00 | 712 | 14 | 1178 | 65 | 17 | 50 | 67 | 00 | 10 | 29 | 6 | 25 | ..... | | 1 | 50 | 839 | 74 | 942 | 28 | 236 | 37 |
| Middlesex, E. | 437 | 84 | 2562 | 93 | 488 | 47 | 102 | 75 | 52 | 00 | 1529 | 70 | 2172 | 92 | 87 | 93 | 53 | 00 | 20 | 95 | 44 | 43 | 11 | 62 | 4 | 00 | 1565 | 78 | 1787 | 71 | 385 | 21 |
| Middlesex, N. | 386 | 114 | 1972 | 86 | 485 | 87 | 93 | 75 | 73 | 00 | 827 | 59 | 1480 | 21 | 43 | 49 | 49 | 76 | 15 | 44 | 14 | 53 | 5 | 85 | 10 | 27 | 992 | 11 | 1131 | 45 | 348 | 76 |
| Middlesex, W. | 349 | 104 | 2186 | 73 | 1221 | 28 | 87 | 25 | 67 | 00 | 1557 | 00 | 2932 | 53 | 41 | 77 | 97 | 52 | 18 | 85 | 35 | 22 | 53 | 12 | 18 | 45 | 1276 | 38 | 1541 | 31 | 1391 | 22 |
| Muskoka, C. | 117 | 56 | 619 | 30 | 581 | 24 | 28 | 25 | 43 | 00 | 509 | 58 | 1162 | 07 | 1 | 00 | 38 | 15 | 5 | 44 | 19 | 11 | 7 | 00 | 57 | 15 | 606 | 99 | 734 | 84 | 427 | 23 |
| Muskoka, N. | 194 | 123 | 1198 | 66 | 1235 | 39 | 48 | 00 | 70 | 00 | 1234 | 17 | 2587 | 56 | 25 | 20 | 82 | 75 | 21 | 76 | 32 | 64 | 26 | 75 | 11 | 51 | 1846 | 66 | 2047 | 27 | 540 | 29 |
| Muskoka, S. | 281 | 92 | 1166 | 15 | 563 | 26 | 64 | 50 | 64 | 00 | 547 | 02 | 1238 | 78 | 16 | 75 | 58 | 75 | 21 | 26 | 15 | 10 | 11 | 50 | 10 | 70 | 482 | 65 | 616 | 71 | 622 | 07 |
| Nipissing, E. | 23 | 9 | 181 | 1 | 214 | 88 | 5 | 75 | 3 | 00 | 225 | 13 | 448 | 76 | ..... | | ..... | | | 30 | ..... | | 5 | 75 | 1 | 00 | 23 | 75 | 30 | 80 | 417 | 96 |
| Nipissing, W. | 18 | 12 | 78 | .... | 45 | 64 | 4 | 50 | 3 | 00 | 26 | 60 | 79 | 74 | ..... | | ..... | | | 70 | ..... | | 35 | | ..... | | 16 | 35 | 17 | 40 | 62 | 34 |
| Norfolk, N. | 631 | 122 | 3158 | 146 | 523 | 53 | 157 | 75 | 96 | 00 | 1121 | 23 | 1898 | 51 | 95 | 60 | 73 | 36 | 18 | 96 | 67 | 63 | 26 | 00 | 16 | 30 | 731 | 53 | 1029 | 38 | 869 | 13 |
| Norfolk, S. | 288 | 78 | 1385 | 49 | 493 | 33 | 69 | 75 | 56 | 00 | 2819 | 22 | 3438 | 30 | 46 | 50 | 42 | 75 | 28 | 92 | 45 | 00 | 12 | 15 | 67 | 75 | 2708 | 08 | 2951 | 15 | 487 | 15 |
| Northumberland, E. | 299 | 77 | 2189 | 112 | 575 | 47 | 73 | 75 | 77 | 00 | 1309 | 07 | 2035 | 29 | 53 | 57 | 81 | 00 | 20 | 76 | 99 | 91 | 33 | 42 | | 70 | 1251 | 77 | 1541 | 13 | 494 | 16 |
| Northumberland, W. | 243 | 110 | 2645 | 135 | 1089 | 87 | 60 | 75 | 127 | 00 | 1484 | 33 | 2761 | 95 | 39 | 53 | 120 | 27 | 41 | 31 | 59 | 87 | 46 | 55 | 8 | 00 | 1206 | 93 | 1522 | 46 | 1239 | 49 |
| Ontario, N. | 155 | 72 | 1196 | 61 | 361 | 12 | 37 | 75 | 74 | 00 | 869 | 78 | 1342 | 65 | 15 | 49 | 33 | 50 | 5 | 69 | 43 | 40 | 55 | 10 | ..... | | 811 | 78 | 964 | 96 | 377 | 69 |
| Ontario, S. | 495 | 84 | 2075 | 66 | 527 | 18 | 86 | 25 | 83 | 00 | 901 | 80 | 1598 | 23 | 82 | 89 | 74 | 00 | 22 | 17 | 27 | 77 | 2 | 70 | 24 | 84 | 953 | 74 | 1188 | 11 | 410 | 12 |
| Oxford, N. | 170 | 65 | 1439 | 69 | 489 | 02 | 67 | 75 | 96 | 00 | 1113 | 70 | 1766 | 47 | 16 | 75 | 40 | 41 | 13 | 97 | 32 | 50 | 11 | 50 | 2 | 35 | 1164 | 25 | 1281 | 73 | 484 | 74 |
| Oxford, S. | 414 | 93 | 2047 | 67 | 829 | 10 | 103 | 50 | 163 | 00 | 1522 | 99 | 2618 | 59 | 49 | 23 | 109 | 15 | 13 | 99 | 69 | 83 | 89 | 37 | 9 | 44 | 1241 | 85 | 1582 | 86 | 1035 | 73 |
| Parry Sound, N. | 108 | 66 | 602 | 22 | 769 | 76 | 26 | 50 | 18 | 00 | 623 | 56 | 1437 | 82 | 49 | 00 | 27 | 10 | 6 | 71 | 13 | 16 | 9 | 50 | 2 | 85 | 726 | 75 | 835 | 07 | 602 | 75 |
| Parry Sound, S. | 181 | 110 | 1214 | 20 | 595 | 05 | 57 | 75 | 64 | 00 | 1509 | 29 | 2226 | 09 | 116 | 30 | 91 | 92 | 28 | 86 | 16 | 65 | 14 | 15 | 5 | 46 | 1519 | 91 | 1793 | 25 | 432 | 84 |
| Parry Sound, W. | 25 | 15 | 173 | 6 | 157 | 68 | 6 | 25 | 6 | 00 | 20 | 39 | 190 | 32 | | 50 | ..... | | 1 | 49 | ..... | | ..... | | ..... | | 21 | 40 | 23 | 39 | 166 | 93 |
| Peel. | 657 | 193 | 4422 | 166 | 1010 | 21 | 156 | 75 | 276 | 00 | 4344 | 60 | 5787 | 56 | 168 | 35 | 92 | 00 | 52 | 77 | 160 | 86 | 8 | 35 | 25 | 65 | 4345 | 16 | 4853 | 14 | 934 | 42 |
| Perth, N. | 80 | 85 | 1700 | 73 | 349 | 47 | 47 | 25 | 46 | 00 | 753 | 04 | 1195 | 76 | 12 | 00 | 50 | 00 | 12 | 23 | 49 | 65 | 6 | 00 | 110 | 75 | 614 | 82 | 855 | 45 | 340 | 31 |
| Perth, S. | 314 | 90 | 1844 | 84 | 530 | 12 | 78 | 25 | 64 | 00 | 1250 | 82 | 1923 | 19 | 24 | 50 | 106 | 50 | 17 | 56 | 43 | 65 | 20 | 85 | ..... | | 1454 | 45 | 1667 | 51 | 255 | 68 |
| Peterboro, E. | 85 | 32 | 500 | 15 | 171 | 24 | 21 | 50 | 28 | 00 | 387 | 64 | 608 | 38 | ..... | | 5 | 80 | 5 | 67 | 10 | 83 | 2 | 50 | ..... | | 301 | 61 | 326 | 41 | 281 | 97 |
| Peterboro, N. | 20 | 5 | 91 | 1 | 35 | 09 | 5 | 00 | ..... | | 1 | 75 | 41 | 84 | ..... | | ..... | | | 35 | ..... | | 4 | 00 | ..... | | 14 | 75 | 19 | 10 | 22 | 74 |
| Prince Edward. | 619 | 154 | 4031 | 113 | 761 | 98 | 154 | 75 | 88 | 00 | 1609 | 49 | 2614 | 22 | 69 | 45 | 58 | 00 | 22 | 11 | 64 | 78 | 25 | 60 | 10 | 86 | 1929 | 82 | 2180 | 62 | 433 | 60 |
| Rainy River, C. | 165 | 73 | 1122 | 55 | 483 | 67 | 75 | 00 | 15 | 00 | 954 | 46 | 1528 | 13 | 72 | 15 | 61 | 45 | 10 | 48 | 10 | 50 | 10 | 60 | 37 | 12 | 1147 | 22 | 1349 | 52 | 178 | 61 |
| Rainy River, E. | 220 | 85 | 110 | 67 | 475 | 57 | 48 | 50 | 46 | 00 | 1330 | 12 | 1900 | 19 | 3 | 00 | 64 | 60 | 38 | [illegible] | [illegible] | 91 | 9 | 05 | 7 | 47 | 1291 | 73 | 1465 | 79 | 434 | 40 |

ONTARIO WOMEN'S INSTITUTES, STATISTICAL STATEMENT, 1921-22—Continued.

| Institutes. | Membership. | No. of Meetings. | Attendance. | No. Papers and Addresses. | Receipts | | | | | Expenditures. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Balance from 1920-21. | Membership fees. | Grants. | Miscellaneous. | Total. | Expenses for meetings. | Officers' salaries and expenses. | Postage and stationery. | Printing and advertising. | Lecturers' expenses. | Books and periodicals. | Miscellaneous. | Total. | Balance for 1921-22. |
| | | | | | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. |
| Rainy River, W. | 179 | 71 | 975 | 26 | 1237 78 | 47 75 | 46 00 | 1239 68 | 2571 21 | 53 15 | 88 35 | 19 45 | 24 70 | 22 69 | 84 65 | 1135 49 | 1428 48 | 1142 73 |
| Renfrew, N. | 281 | 86 | 1509 | 45 | 639 44 | 63 50 | 65 00 | 1066 82 | 1834 76 | 55 50 | 25 70 | 20 45 | 32 26 | 13 00 | 6 30 | 704 50 | 857 71 | 977 05 |
| Renfrew, S. | 257 | 117 | 2382 | 119 | 663 08 | 62 25 | 64 00 | 1237 81 | 2027 14 | 23 00 | 24 80 | 23 37 | 13 65 | 6 50 | 4 58 | 1391 93 | 1487 83 | 539 31 |
| Simcoe, C. | 250 | 107 | 1702 | 119 | 416 67 | 59 25 | 114 00 | 859 66 | 1449 58 | 38 00 | 36 00 | 12 11 | 15 64 | 9 25 | ..... | 1021 56 | 1132 56 | 317 02 |
| Simcoe, E. | 657 | 279 | 2966 | 154 | 876 53 | 164 25 | 192 00 | 1850 91 | 3083 69 | 18 30 | 99 54 | 32 55 | 45 70 | 23 65 | 23 20 | 1905 98 | 2148 92 | 934 77 |
| Simcoe, S. | 417 | 109 | 1851 | 150 | 867 32 | 91 00 | 146 00 | 1661 55 | 2765 87 | 176 34 | 61 85 | 15 74 | 63 42 | 58 25 | 47 30 | 1163 01 | 1585 91 | 1179 96 |
| Simcoe, W. | 264 | 103 | 1039 | 54 | 517 96 | 70 50 | 64 00 | 3796 23 | 4448 69 | 60 00 | 220 35 | 28 79 | 68 76 | 19 50 | 600 21 | 2284 26 | 3281 87 | 1166 82 |
| Stormont | 220 | 72 | 1397 | 40 | 857 90 | 53 75 | 40 00 | 1885 28 | 2836 93 | 50 20 | 30 00 | 16 92 | 12 89 | 21 40 | 6 00 | 1252 44 | 1389 85 | 1447 08 |
| St. Joseph Island | 82 | 37 | 419 | 14 | 119 89 | 20 50 | 34 00 | 237 17 | 411 56 | 7 00 | 23 50 | 3 78 | 2 00 | 16 00 | 6 70 | 208 51 | 267 49 | 144 07 |
| Temiskaming | 338 | 160 | 1580 | 63 | 1426 21 | 95 75 | 124 00 | 3617 64 | 5263 60 | 70 25 | 137 87 | 69 04 | 13 15 | 14 10 | 4 50 | 4399 98 | 4708 89 | 554 71 |
| Thunder Bay | 262 | 143 | 2235 | 88 | 925 84 | 65 50 | 104 00 | 2388 13 | 3483 47 | 88 10 | 124 72 | 14 94 | 24 01 | 22 00 | 60 75 | 2309 66 | 2644 18 | 839 29 |
| Union | 96 | 30 | 711 | 24 | 116 45 | 24 00 | 28 00 | 387 09 | 555 54 | 9 68 | 35 25 | 4 32 | 12 92 | 9 00 | 34 70 | 319 40 | 425 27 | 130 27 |
| Victoria, E. | 251 | 93 | 2304 | 90 | 388 81 | 62 75 | 90 25 | 303 47 | 845 28 | 15 23 | 57 65 | 24 06 | 26 69 | 17 10 | 95 | 457 09 | 598 77 | 246 51 |
| Victoria, W. | 428 | 99 | 2429 | 82 | 828 18 | 102 50 | 102 00 | 1183 75 | 2216 43 | 48 53 | 72 20 | 23 28 | 92 38 | 8 17 | 1 15 | 1185 20 | 1430 91 | 785 52 |
| Waterloo, North | 94 | 35 | 605 | 16 | 191 36 | 24 75 | 63 00 | 238 86 | 517 97 | 9 25 | 38 65 | 5 03 | 2 50 | 11 47 | 2 65 | 287 33 | 356 88 | 161 09 |
| Waterloo, S. | 498 | 90 | 2393 | 82 | 1442 98 | 124 50 | 193 00 | 2977 45 | 4737 93 | 132 41 | 149 00 | 20 86 | 69 91 | 21 55 | 17 24 | 3279 54 | 3690 51 | 1047 42 |
| Welland | 732 | 171 | 4073 | 144 | 1496 86 | 173 70 | 250 00 | 5057 55 | 6978 11 | 61 87 | 203 45 | 40 60 | 158 16 | 40 20 | 19 20 | 4694 41 | 5217 89 | 1760 22 |
| Wellington, C. | 308 | 105 | 3199 | 103 | 789 84 | 68 75 | 100 00 | 779 80 | 1738 39 | 31 90 | 62 48 | 25 24 | 34 65 | 3 50 | 1 07 | 935 30 | 1094 14 | 644 25 |
| Wellington, E. | 178 | 40 | 1068 | 35 | 356 94 | 44 50 | 53 00 | 550 11 | 1004 55 | 12 60 | 35 00 | 5 75 | 13 09 | 7 50 | 2 50 | 508 26 | 584 70 | 419 85 |
| Wellington, S. | 360 | 85 | 2497 | 130 | 212 95 | 88 75 | 77 00 | 827 49 | 1206 19 | 35 46 | 56 00 | 12 73 | 23 62 | 48 60 | 28 75 | 829 60 | 1034 76 | 171 43 |
| Wellington, W. | 189 | 53 | 708 | 53 | 654 62 | 47 25 | 65 00 | 548 03 | 1314 90 | 39 29 | 75 47 | 5 28 | 36 07 | 6 90 | 3 00 | 379 14 | 545 15 | 769 75 |
| Wentworth, N. | 581 | 119 | 2172 | 114 | 1583 49 | 143 75 | 126 00 | 1986 18 | 3839 42 | 24 34 | 77 85 | 20 99 | 45 02 | ..... | 1 61 | 1972 89 | 2142 70 | 1696 72 |
| Wentworth, S. | 603 | 145 | 4084 | 109 | 827 27 | 150 50 | 173 00 | 1793 97 | 2944 74 | 46 09 | 111 99 | 30 23 | 80 08 | 21 70 | ..... | 1912 08 | 2202 17 | 742 57 |
| York, E. | 477 | 111 | 3214 | 92 | 866 74 | 118 35 | 108 00 | 1901 82 | 2994 91 | 63 07 | 81 00 | 25 92 | 81 12 | ..... | 9 10 | 2066 71 | 2326 92 | 667 99 |
| York, N. | 371 | 85 | 2131 | 83 | 424 68 | 82 00 | 96 00 | 1108 17 | 1710 85 | 39 42 | 36 05 | 24 43 | 42 17 | ..... | 4 90 | 1054 85 | 1201 82 | 509 03 |
| York, W. | 395 | 113 | 2782 | 107 | 316 55 | 99 50 | 102 00 | 1104 14 | 1622 19 | 41 85 | 57 30 | 11 15 | 58 44 | 53 75 | 1 00 | 1077 88 | 1301 37 | 320 82 |
| Totals | 31,314 | 9,509 | 187,512 | 7935 | $ 76,326 | $ 7,828 | $ 8,923 | $ 143,395 | $ 236,472 | $ 5,521 | $ 6,745 | $ 1,851 | $ 4,374 | $ 1,799 | $ 2,000 | $ 141,980 | $ 164,270 | $ 72,202 |

## THE WOMEN'S INSTITUTES OF ONTARIO.

GEORGE A. PUTNAM, B.S.A., SUPERINTENDENT, TORONTO.

*(Address given at Annual Convention.)*

Twenty-five years ago the women in the Township of Saltfleet, Wentworth County, decided to form an organization for the purpose of enabling farm women and others who so desired to discuss their own problems in their own way, largely, in the beginning, their problems as housekeepers and homemakers.

It was well and only natural that these women, home women with the mother heart, should soon decide upon something more; to co-operate with each other and with the men in providing a better opportunity and better service for all individuals in the community, opportunities and services in which all the people were concerned. Community life is a reflection of the home life, and the opportunities, social standards, activities and ideals of the community, influence to a greater or lesser degree each home in the community and directly or indirectly each individual.

Women are vitally and directly concerned and are becoming generally interested in most community problems and are able to contribute in talent, council, encouragement and material goods in improving conditions and services. The women of the Institute approached the task of community homemaking with lack of experience and training, and with more or less timidity; they were blazing the trail for co-operative effort in human efficiency and uplift.

For a time their activities through co-operative effort in the interests of the home and the community were considered another feminine fad which would be short lived. To-day, because of your efficient organization, the results of your efforts, and the possibilities of the future, the leaders in community, Provincial and national affairs—education, health, economic position, social activities and all other problems in which the whole people are concerned, are looking to you for advice and co-operation, and they will not be disappointed. When the mother and sister visit the house which has been cared for by men alone, they do not necessarily clean up the whole house before any comforts are provided. You soon, however, find that some comfortable, clean corner has been provided and an attractive, wholesome meal prepared, although the whole house does not show evidence of women's care. So, in community homemaking, where men have been trying to carry on, the coming of woman has resulted in many much needed improvements, but they have hardly got well started as yet. Remember that the women have come into community and national affairs at the invitation of the men. They have the power of the ballot in most fields, and it will, no doubt, be extended to other fields. Women's activities in community and national affairs cannot be termed a "casual call" to do a little cleaning up; they have come to stay, to assist in effective community and national homemaking.

Women have in altogether too large numbers said to themselves, if not to others, "There is nothing required of us." That idea is passing, and the mothers and daughters of Ontario and the other provinces of the Dominion recognize that each has a responsibility and power for service not only in the home but in the community.

The advantages which we enjoy with all mankind in a Christian country carry with them large responsibilities, and we should show our appreciation of these advantages by each offering to do her bit. Any uplift that comes to the womanhood or childhood of the nation is a legacy of the whole people. Whatever elevates the home life is a blessing to the whole people.

### Take Stock of Our Activities and Resources.

It is well that we meet once a year in convention in order that we may take stock of our activities and resources, and make plans for future effort. It is well that the Institutes "check up" on each other and upon the services rendered by the various departments of the Government and voluntary organizations; and it is well, on the other hand, for the Department to check up on itself, and to check up on the Institutes; a kindly, helpful checking up. The real value of your convention will depend, not so much upon what you plan, but upon your activities throughout the year; so let us reason together as to what building material, clothing, nourishment and fuel there is available for strengthening and increasing the vitality of this organization for efficient homemaking both in the household and the community for another year.

I shall confine my field to presenting the frame-work of the resources available to the Institutes and their duties and possibilities as I see them.

### Resources.

First, under resources, is your *membership*, composed of women and girls of responsibility, who are desirous of gaining information of practical every-day value, making towards efficiency in order that they may render the best service to those dependent on them for their daily comforts and to the community in which they live. Women of responsibility in the homes are the ones who are naturally attracted to the Institute, and who remain with it. The common good and the anxiety to serve has overshadowed personal ambition. The few who have endeavoured to utilize the Women's Institutes for personal or party ends have fallen by the wayside,—just naturally dropped out of the work. The women who have the Institute spirit, service to all, are a force which means much to the whole people in real nation building. There appears to be little room for the professional organizer among the practical women of the Institute. The Institute is not formed simply for the purpose of *organizing;* but once an Institute is organized in the ordinary sense of the term, the first concern of the members should be to *organize* the *organization* for effective work.

### Basis of Organization.

You have a basis of organization which has stood the test and is capable of development and adjustment in keeping with the requirements of the day. No organization responded more quickly, or effectively, to war work in 1914 than the Women's Institutes of Ontario, and they stayed by it until the end, and have already reached a standard in peace time far in advance of pre-war activities in what we may term regular Institute work. You have consistently, from the beginning, included all classes, sects and nationalities in your membership, and you have kept the local organization as the essential unit from which all effective effort and results must spring. Your organization is entirely voluntary and self-controlled and provides a means for the co-ordination of all local forces—talent and material resources—for the common good; besides, your organization provides a means whereby departmental effort in education and administration are made most effective. We cannot overestimate the value of an organization which is broad enough to include all classes and which provides for the utilization of local and outside resources and services to the best advantage for the whole people.

It is a matter of great encouragement to note that the Institutes of Scotland have decided upon a basis of organization which coincides in all essentials to

the Ontario plan, and like ours, have a Government service, which we shall call a Department of Homemaking and Community Building, through which all Government, administrative, and educational forces may co-operate with the local voluntary organizations.

### Leadership.

Then you are very fortunate in adopting the principle of not choosing any particular person to act as general and permanent leader in your branch or district organization; but instead you choose a person specially qualified for the particular line of work to be undertaken, guided by a representative committee. This is a most effective method and enables each branch or district to deal with any problem, or line of work affecting the whole people, without the organization of a new society. She who has been a teacher would naturally be chosen to guide the educational efforts; successful, practical women in the home will be asked to direct lines of work in which they have demonstrated their ability. The function of the president is to muster her forces to the best advantage, but not to attempt to lead in all lines of effort.

### Methods of Work.

Your methods of work are a great source of strength. While the Institutes have before them reports on work done throughout the Province, methods followed, results accomplished, literature available and plans for future effort, no cut and dried programme is prepared for them. Each organization maps out its programme in consideration of the needs of the people and the available resources, both local and from outside. The practice of utilizing women who are not members, as well as men, both in the formation of your committees and the carrying out of your plans, has added greatly to the strength and efficiency of the Institute.

### Local Talent.

No community need fear to undertake the organization of a branch Institute, for we have yet to find in the Province of Ontario a community where *talent* is not brought to the fore, if the aims, objects, methods of work and responsibilities in the Institute are clarly set forth and appreciated. Talent in the Institute consists not only in *knowledge* and *efficiency* but in *willingness to give* to each other of the best that we have. The efficiency acquired and the sound judgment developed through successful housekeeping and homemaking in the rural districts is a great asset in the work of the Institute.

### Power to Serve.

While the Institutes were at the beginning attractive from the standpoint of being a centre where knowledge could be acquired, the compelling force now is a *sense of power to serve* and *responsibility as a citizen*, a natural development in an organization made up chiefly of mothers whose time is largely occupied in looking to the comfort and welfare of those dependent upon them. With that same spirit extended to community housekeeping, you can readily appreciate the fact that their efforts are most effective.

### Co-operation of Men.

Another resource of great value in the work of the Women's Institutes is the co-operation of men, both individuals, voluntary organizations and officials

of the municipality. Women do not necessarily undertake to perform all the labour found necessary in attaining their objective. The advice and the co-operation of the men is sought and freely given, not only in deciding upon work to be undertaken, but in methods of accomplishment and in providing the means necessary to carry out the plans decided upon.

### Co-operation with Government Service.

Another resource, which you will note I have modestly placed last, is the opportunity you have to co-operate with the Government, especially the Administrative Departments of the Government, in making their service of the greatest value. May I venture the statement that women will never be unanimous any more than men in their likes or dislikes, approval or disapproval of individuals, policies, or parties, when it comes to elections; and since the Institute will always have members representing as many parties as there are in the locality concerned, may I suggest that such an organization would do well not to secure promises from parties seeking election or re-election, but rather to present to the Government of the day recommendations and suggestions based upon the practically unanimous conclusions of their membership and bearing upon those problems in which women and children are vitally interested.

Resolutions and policies, recommended by the Institutes to governing bodies and administrative heads, should first be submitted to the whole membership and an opportunity for expression of opinion provided, if your recommendations and suggestions are to have weight.

### Results Accomplished.

Before presenting my views as to the duties and possibilities of the Institutes as I see them, may I refer very briefly to the results accomplished?

The *mothers* of the rural districts have enjoyed the variety and sociability provided, while acquiring knowledge along both practical and cultural lines and rendering service of real value and worth to the community and the nation.

The *daughters* are taking a keen and intelligent interest in present day activities and preparation for future responsibilities.

The *fathers* have found both home life and community undertakings of greater interest, and are ready to lend their aid in making towards comfort, efficiency and high ideals. They have come to appreciate more keenly the relative importance of the health and welfare of the children as compared to that of the livestock.

Many *boys* and young men have become convinced that there are better ways in agriculture, better ways which are possible of realization by them, and coupled with enjoyment and contentment on the land.

The *children* even have felt the influence of the Institute and have come to appreciate the value of strength of body and culture of mind in preparation for a strong citizenship. All boys and girls are anxious to be efficient in some line; the Institute is pointing out the way to the desirable.

We have outlined some of the most important resources of the Institutes and summarized some of the results. May I be permitted to further set forth the possibilities and the duties as I see them.

### Possibilities and Duties.

To strengthen and make more attractive and effective the educational facilities now existing in your community, and to bring to the residents of the

rural districts advantages in education suited to their needs, should be one of the first calls on the Institute. Continue the good work which you are doing in connection with the public schools and make them so attractive, interesting and helpful that the children will clamour to go to school instead of scheme to avoid it.

### Demonstration-Lecture Courses.

The Demonstration-Lecture Courses under the direction of the Institute Branch, and made possible and most effective through co-operation with the local Institutes, reach annually about 6,000 girls and women, and their success has justified the methods followed. Their development and extension depends largely on your effective co-operation and the evidence of benefits derived. An extension of the regular Demonstration-Lecture course service is found in the Three Months' Courses in Agriculture and Home Economics for young men and women, to be held at eight points in the Province in the winter of 1922-23, and which the Minister of Agriculture hopes to see established in every county.

Class in home nursing held at Uttoxeter.

### Libraries, Literary Societies, Athletic Fields and Community Halls.

The establishment and carrying on of libraries, literary societies, rinks, athletic fields, community halls and many other activities in which you have shown efficiency should be given consideration. In your activities along educational lines, you should consider the establishment of healthful and uplifting entertainment and amusement for the whole community, especially for the youth of the land who have shown a tendency to stress the purely amusing and entertaining, with little consideration for that which can be made of value in the building of a strong citizenship. If they are given a chance of choice between the constructive and useful presented in an attractive form, as compared to the purely amusing and entertaining, the young Canadian will usually choose the former.

### Education for Grownups.

I am a great believer in the power of women and girls of responsibility to acquire through the exchange of ideas and information, reading, study courses, lectures and demonstrations, information of real value from the viewpoint of immediate practical application to the every-day responsibilities of life; and I trust the day will never come when the Institutes will not give due prominence

to every-day home problems,—choice and preparation of foods, housing, clothing, home beautification and home conveniences. Do not stress the community activities and neglect the home for this course will destroy the very foundation for permanent, worth-while community undertakings.

### Health Problems.

A keener and more intelligent interest is being taken in health problems in the rural districts; and it is a matter of deep regret that the average physical efficiency in the country is below that found in the centres of population, due no doubt to the lack of regular school medical inspection and the difficulty of securing medical and nursing service to build rather than to repair the physical child and adult. Your first duty, it appears to me, is to utilize the various services now available (literature, courses of instruction in health, the limited school medical inspection service, school nurses, district nurses) to the best advantage; and may I suggest that you consider the advisability, or may I venture to say the absolute necessity of placing all service making toward the health and physical development of the people upon a basis which will insure guidance, care and treatment of the physical body to which every citizen is entitled.

### Running Water and Electricity.

Can we not formulate some plan whereby modern conveniences can be introduced in the rural homes? Running water, electricity, modern conveniences, up-to-date utensils will do much to overcome the handicap of lack of household labour in the farm home. The country is a good place to live from many standpoints, but we can make it more attractive by making the farm home a convenient place to work in.

### Immigration.

Most comprehensive plans are being made to induce persons of means to settle in Canada. Many of them will leave comfortable homes and a rich community life to settle among strangers. Make them welcome to your community; they will need your friendship and advice and will have valuable contributions to offer in the work of your organization. Make good Canadians of them.

### Power of Co-operative Effort.

You have demonstrated the power of co-operation in a multiplicity of ways; the power of united action on the part of all concerned. While your efforts have been largely along social lines, your experience should ensure strong support in introducing and stabilizing co-operative methods in the marketing of farm products, for I believe there is no other way to successfully establish agriculture (and we are an agricultural country) upon a sound, economic basis; and when agriculture is so organized, the success of all other classes is made more secure. Many of the conveniences and comforts in the home and community advantages which you desire are dependent upon the stabilization of the economic situation. Make a study of the underlying principles of co-operation which are being so forcefully presented to the people of Ontario and in which our Minister of Agriculture, the pioneer in advocating co-operative effort along commodity lines, is so deeply interested.

Do not forget that the Institute is for the whole people, and the activities should be of such a character that each member will have an opportunity to contribute in some respect, and with this privilege we can rest assured that each will also derive benefits.

### Ontario the Pioneer and Leader.

Have I overstated the present situation and possibilities? Have I been theorizing? The story seems too fanciful to be real; but what I have outlined is based absolutely upon the accomplishments of Institutes here and there throughout the Province of Ontario, which was the pioneer and is still the leader in many respects in this most wonderful work which is rapidly extending to other countries and which will be a world factor not only in home problems but in the community of nations.

Mrs. Adelaide Hoodless, who inspired the organization of the first Women's Institute.

## HOW THE ONTARIO INSTITUTES BEGAN.

In 1896 when the Hon. John Dryden was Minister of Agriculture and Mr. F. W. Hodson, Superintendent of Farmers' Institutes, it was arranged that Mrs. Adelaide Hoodless of Hamilton, herself a daughter of the farm and one of the pioneers in advocating Domestic Science for homemakers, should address the Farmers' Experimental Union at Guelph. Her address, stressing the need of science being applied in the management of the home and the family as well as on the farm and in the production of high-grade cattle, voiced a general feeling among thoughtful men and women in rural Ontario.

As far back as 1880, Literary Agricultural Clubs as they were then called, with both men and women as members, had been established in Middlesex under the encouragement of Mr. Weld, editor of the "Farmers' Advocate," London. These were the forerunners of the later Farmers' and Women's Institutes, under the Department of Agriculture.

The secretary of South Wentworth Farmers' Institutes, Mr. Erland Lee, of Stoney Creek, was so impressed with the address given at the Experimental

Union that he suggested its being given at the South Wentworth winter series of meetings to that executive. It was finally arranged that it should be added to the Stoney Creek programme only, Col. McRae, of Guelph, father of the author of "In Flanders' Fields," being one of the Departmental speakers also.

Here the idea of an organization to study the betterment of homes and children was so well received that it was moved to start at once a sister society to the Farmers', or more women indicating their approval. The following Saturday, February 20th, 1897, one hundred and one girls and women were present, and the "Women's Department of the Farmers' Institutes of South Wentworth" was inaugurated with the assistance of Secretary Lee and Major Carpenter. This Branch was first called the Saltfleet Township Institute but later "Stoney Creek." The first officers were:

*Hon. President*, Mrs. Adelaide Hoodless, Hamilton.
*President*, Mrs. E. D. Smith, Winona.
*Vice-presidents*, Mrs. S. Melson, Stoney Creek.
*Treasurer*, Mrs. J. McNeilly, Stoney Creek.
*Secretary*, Miss M. Nash, Stoney Creek.

Squires Hall, Stoney Creek, where the first Institute was organized.

Secretary Lee at once notified the Minister of Agriculture and the Superintendent of Institutes of the action that had been taken, and received a warm response from both with promises of all possible assistance. The following year both monetary assistance and lecturers began to come from the Department. In this way began the unique co-operation between the rural homemakers and their Government which twenty-five years later has come to be one of the most important and far-reaching lines of administrative and educational activity in the Province.

Among the first lecturers were the famous United States Domestic Scientist, Mrs. Rorer; Miss M. U. Watson, afterwards Director of Macdonald Institute, Guelph; Miss Hope, of the Hamilton School of Domestic Science, and Miss Laura Rose, Dairy Specialist, Ontario Agricultural College, Guelph.

It was early decided to adopt "For Home and Country" as the motto for the new organization, and the membership fee was set at twenty-five cents per year so that no girl or woman over fourteen might be deterred by the cost from

becoming an active member. Men and women of later years heartily endorsed this view, with the result that the great non-sectarian, non-partisan organization has been kept democratic, free from over-organization with its inevitable cost and irritating red tape, and with each Branch in individual and direct relationship with the District and Department.

The sound principle of the frequent changing of all officers except the Secretary, of each member taking her turn and doing her bit in office, on committees, and in the monthly programmes, has been from the beginning practiced and advocated, and with the utilization of all other possible neighbourhood resources has been the means of unearthing and developing unsuspected talent of many kinds in a most gratifying way. "If you know a good thing, pass it on," is still to be seen repeatedly on Branch programmes.

At three widely separated points in the Province the same feeling expressed itself in the same way that year, Stoney Creek, Wentworth County, Whitby, Ontario County, and Kemble in Grey County, all organizing within a few months of each other and still going successfully.

The Institutes have had three superintendents. Superintendent F. W. Hodson was followed in 1900 by Dr. George C. Creelman, afterwards president of the Ontario Agricultural College, Guelph, who in turn was succeeded in 1904 by Superintendent George A. Putnam.

Premiers, Ministers, state departments and colleges have year by year been tending towards placing their resources ever more liberally at the service of the homemakers, for with the changing social outlook the significance of the work inaugurated so quietly twenty-five years ago becomes clearer, and the rural home is seen to be in deepest truth the nursery of the nation.

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## INFLUENCE OF THE INSTITUTE ON THE HOME.

Mrs. A. E. Walker, Stoney Creek.

At the first regular meeting of the mother Institute we find in the constitution adopted, the following:

"The object of the Institute shall be to promote that knowledge of Household Science that shall lead to the improvement in household architecture, with special attention to home sanitation; to a better understanding of the economic and hygienic value of foods and fuels; and to a scientific care of children, with a view to raising the general standard of health of our people."

Although that is what the Institute set out to do, it is by no means all it has accomplished. It has also been a powerful factor in influencing for good in the minds and morals of those in the home. The influence of the Institute on the home is then of a three fold nature, physical, intellectual and social or moral.

Institute members from the very beginning endeavoured to raise the standard of health in the homes. They made a study of the proper way of feeding, clothing and housing their families. This they did by reading books, and having discussions thereon; by having members write papers on such subjects as "Proper Food for Children," "Sanitation in the Home," "Value of Whole Wheat Bread," etc. They also had addresses from local nurses and doctors and demonstrations on "First Aid" given by members. Later on they had the advantage of having good lectureres speak and demonstrate on such subjects as "Bread and Butter Making," "How to Cook Vegetables," "How to Recognize, Prepare and Cook the Various Cuts of Meats," etc. Salads until the advent of the Women's Institute were in rural districts practically unknown as also was the canning of

vegetables, except probably corn and tomatoes. The canning of fruit without sugar for pies and the making of homemade candy we learned later.

The architecture of the home as foreseen by the pioneers of the Women's Institute had much to do with the health of the whole family. Institute women to-day are demanding and getting them too, such conveniences as furnaces, sinks, running water and bathrooms. The women who do the work are having a "say" in the planning of the house—they demand floors of a uniform level, the sink of the right height, and the house in general as convenient and comfortable as the purse will allow. These ideas we obtained through the Institute from the Department lecturers addressing us in our home branches and from such addresses as are given at the conventions by Miss Chapman and others. With the electrifying of our townships we have also in our homes electric washers, irons and vacuum cleaners, thus helping to conserve the health and strength of the mother, also giving her more time to devote to the welfare of others in the home.

Group of charter members photographed at the Silver Anniversary celebrated at Stoney Creek, June, 1922.

To the Institute we owe Rural Medical Inspection followed by the school nurse who, after examining the children at school, visits the home, points out the physical defects to be corrected and instructs the mother how to better feed, clothe and care for her children.

The demonstration lecture courses provided by the Department have exerted a wonderful influence for good in our homes. Many women who knew nothing of sewing are now able to provide more and better clothing for their families at less expense.

The Home-Nursing and First-Aid Course has been extremely helpful. This was particularly noticeable at the time of the influenza epidemic when nurses and doctors were so busy; and the First-Aid Course has been known to be the means of saving the life of a child from drowning. Those of us who come to the conventions here year after year learn much of immeasurable value to the home from the wonderful addresses of Dr. Patterson and Dr. MacMurchy.

The Domestic Science Course has proven a wonderful help, particularly to the young girls, and has in many cases been an incentive to perfect themselves in the science of homemaking by attending Macdonald Institute.

The Women's Institute has been the means of developing in many women latent talents that have lain dormant for years. It is wonderful the way in which it has brought women out intellectually; helped them, as it were, to find themselves. Women whom you could not at first induce to answer even the roll call are now entering into discussions and debates. The preparing of papers by members, particularly when they have to consult reference libraries, does much to develop the intellectual side of the Institute worker.

The Institute is a school for grownups and what we learn there cannot fail to reflect on the family. Did you ever notice on your return from an Institute meeting or convention how anxious your husband and children are to find out what you have seen and heard? Institute women study to-day questions

Mr. Erland Lee, secretary South Wentworth Farmers' Institute in 1897; Mrs. E. D. Smith, first president Stoney Creek Women's Institute, 1897. Photo taken at Silver Anniversary, 1922.

hitherto unthought of and are able to discuss them intelligently with their families, thereby gaining and holding their respect. Mothers, do not allow yourselves to become a back number intellectually any more than in your personal appearance if you wish your family to honour and respect you.

Through the Institute an incentive for more and better reading has been developed. If books are to the mind what blood is to the body, how very important it is, then, that we read nothing but the very best. The importance of reading was recognized in the early days of the Institute, for in the very first year of the pioneer Institute we find the women holding a special meeting each month for the purpose of reading and studying good books. Many Institutes devote a whole meeting occasionally to "Books." The members discuss, too, the kind of books suitable for children and in this way are better fitted to direct the reading of their children in the proper channel. It has been said that the books a boy or girl reads for pleasure before the age of sixteen do more to form

his ideals and mould his character than all the text books he reads in school. Children must be helped in selecting their books. In country places where we have not trained librarians, Institute members can often co-operate with the Library Board, advising them in the proper selection of books, especially those for children.

Prof. Creelman, three or four years ago, in addressing us in convention, told us that he had for years made a study of rural life, and he had found that the Women's Institute is the only organization that has touched the heart of the country people and created in them a desire to learn. Thus the Institute cannot fail to broaden woman's vision and widen her intellectual horizon, thus leaving its result on the home.

The moral or social side of life is very largely influenced by the Women's Institute. The spirit of hospitality is developed to a marked degree when the meetings are held from home to home. A great many of our most valued friends are made through the Institute. How often does our housework become dull and monotonous and we feel discontented and dissatisfied, but after attending an Institute meeting we come home cheered up and filled with new thoughts and ideas which enable us to attack the problems in the home with renewed energy. This is even more particularly the case in Northern Ontario and in all outlying districts—for there the Institute means everything to the women. In many places it is really all they have outside the home, for in a few communities they are even without schools or churches.

The very presence in our homes of the Government delegate sent out by the Department has wrought an elevating influence and many of us deem it a great privilege to be allowed to entertain her on her rounds.

Through the Institute the community has been made safer for the home. At the time of the referendum vote, Institute women took an active part, with the result that to-day the moral atmosphere of many a home is purer.

I would like to cite an incident in our own village where the Women's Institute had a direct moral influence on the home, and no doubt many such cases are happening every day. The proprietor of the temperance hotel applied to our township council for a license to instal pool tables in his house. The Institute women, realizing the evil effects it would have on their homes, petitioned the council to refuse the license. To strengthen our cause at the next council meeting, a deputation of some forty strong waited on the council. We presented our arguments with the result that no license was granted. Our council was twitted (by a few men in favour of the pool table) of "being led around by a bunch of old women."

Through the Institute our vision has been broadened; we have learned to respect the feelings and rights of others. The friendly spirit existing among the members of the three churches in our village, which enables them to hold annually a union prayer meeting and a union missionary meeting alternating from church to church, is attributed to the co-operative spirit engendered through the Women's Institute. A prominent church official said to me not long ago, "If the Women's Institute has done nothing else but bring about the kindly feeling now existing among our different church members, it has done a work well worth while."

The Institute has taught us to be good homemakers as well as good housekeepers. In the home the mother has the responsibility of moulding the lives of her children. While men can do many things women cannot do, they cannot make a home by themselves. In the hands of the young women and girls lies largely the making of the future homes, and we cannot better fit them for the

duties of homemaking than by taking advantage of the means at our disposal through the Women's Institute, and give them a scientific training as homemakers. We may rest assured then that the success of our nation is secure, for the home is the bulwark of the nation; a nation cannot rise to a higher level than its homes.

Mrs. Pankhurst in addressing a meeting in Hamilton last week, said "Environment is of vital importance in the rearing of a child; the child brought up in a home where the parents are public spirited has a much greater chance of being a good man or woman than a child reared under reverse conditions." Therefore it behooves us as mothers to identify ourselves with an organization that engenders in us a broader outlook on life that comes only through helping others. And I believe that a no more suitable organization can be found than the Women's Institute whose very principles spell service and co-operation.

Some of the first workers at Stoney Creek. From left to right: Mrs. J. McNeilly, treasurer; Mrs. Laura Rose Stephen, lecturer; Miss M. Nash, secretary; Mrs. E. D. Smith, president; Mrs. Felker.

## INFLUENCE OF THE INSTITUTE IN RELATION TO COMMUNITY AND NATIONAL PROBLEMS.

Mrs. Louis Danard, Kemble Institute.

As a representative of one of the first branches organized, I am asked to show how the influence of the Women's Institute is felt in the community, and from this its effects on national problems. It is quite a coincidence that two of the first-formed branches were started in Stoney Creek and "Stony Keppel." Surely we are planted on a firm foundation. The first organizers were women who had a dream at the heart; they looked into the future and saw great visions of useful spheres of activities for women. We have only to look at this large gathering in Convocation Hall to see how their visions have been realized.

Let us go into the Children's Shelter; there we see cots provided by the Institute. Again, pay a visit to our hospitals; several of the branches have furnished rooms in the wards, and look after them. We have helped to furnish a Nurse's Home, and also Rest Rooms where tired country mothers may rest. Grey County sent a motor ambulance to her noble boys in France.

The Institute realizes that our boys and girls are Canada's greatest asset and hope that they will in a few years guide the destinies of churches, her muni-

cipalities and governments. She also knows a boy's life in the nation is but a reflex of his life in the community. Therefore, it is up to us as Institute women who have as our motto, "For Home and Country," to remove the pitfalls and safeguard the morals of our young people by providing healthful amusement.

In Kemble we have a well-equipped library and building, with piano and games for winter and tennis, croquet and other sports for summer. We have had choral classes, debates and a literary society, also a United Young Peoples' Christian Association. We will not rent our hall for a dance or box social, as we realize neither is helpful to the young people.

And now that the Institutes are having their monthly reports printed in our town papers, let us show to the readers of papers that principle, right and honesty are always, everywhere and eternally, best.

What we, as Institute members, need is just to stop and think, for we are told that great thinkers make great nation builders; so let us place before our boys and girls good, clean literature for food for thought. Let us place good magazines and papers before such as those printed for Sunday reading, with so much in to mar and dishonour the Sabbath.

Let every member support her village store and the town where she sells her produce, thus living out the Golden Rule. Let Service always be our motto. We meet together as sisters in one great cause—for the bettering of Home and Country.

The name of Hoodless, long shall live.

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## INFLUENCE OF THE INSTITUTE ON EDUCATION.

MRS. J. B. MITCHELL, A CHARTER MEMBER OF THE WHITBY BRANCH.

The object of the Women's Institute was the same a quarter of a century ago as it is to-day, "The Dissemination of Knowledge Relating to the Home," and it was with this thought that at Whitby, June 29th, 1897, a meeting of the ladies of South Ontario was convened by the late Mrs. J. L. Smith, Whitby, for the purpose of organizing a Women's Institute. A partial organization was affected. A little later another meeting was called and the officers elected were:

*Hon. President*, MRS. J. L. SMITH, Whitby.
*President*, MRS. S. L. BROWN, Whitby.
*Vice-President*, MRS. PURVIS, Columbus.
*Treasurer*, MRS. J. B. MITCHELL, Whitby.
*Secretary*, MRS. WM. ANDERSON, Whitby.

On October 12th the first regular meeting was held in the Council Chamber, Whitby. After a musical programme, a paper on "Winter Window Gardening" was read by Miss Mun, Whitby, which was very helpful. A pleasing feature of the meeting was an address on "Prize Bread and Butter Making" by Miss Laura Rose (now Mrs. Stephen) which was listened to with the closest attention and was followed by a lively discussion. Miss Maddock, of the Ontario Agricultural College, Guelph, was also at the meeting and spoke on "Bacteria as They Affect the Home." This address was well received. In closing her report of the meeting the secretary said, "Judging from this first meeting we may safely say the Women's Institute of South Ontario is likely to become at an early date a very successful and useful organization." Twenty-three names were handed in for membership, and at the end of the year the membership was seventy-three. To-day the membership of South Ontario Women's Institutes is over five hundred.

In the last generation there was a very strong feeling against women taking the position which we recognize they ought to, and do, efficiently occupy in society. This arose from two reasons: first, many imagined that it was unwomanly, and the other objection was the extreme measures to which those who were advocating the cause went in support of their opinions. On these accounts any effort of women to undertake any work, except in relation to the home, was looked upon with disfavour.

To overcome this prejudice and open a broader field for their activities, and at the same time to educate women themselves in regard to their own responsibilities and capacities, it was necessary to demonstrate these four things: First, there are subjects in which women are more vitally interested and of which they have more intimate knowledge, and for which they are better adapted by nature and training than men; second, that they are capable of conducting their affairs in an intelligent and business-like manner; third, there is full scope for all their abilities without infringing upon the duties and privileges of men; fourth, these objects can be attained without in anyway creating friction or antagonizing men.

Babies' day at Maynard Institute.

About this time Women's Institutes were organized and their subsequent history proves that these objects have been largely achieved. As an illustration of the first of these objects—that women have their own special sphere of influence—we might mention what the Women's Institutes have done in improving the school. They have insisted on the children who have to remain in school during the noon hour having a hot lunch, and have also agitated the necessity of proper sanitation, and correct lighting and seating in the schoolroom. Medical inspection of the schools and the visiting by the school nurse are due directly to the efforts of the Women's Institutes, as also are supervised playgrounds and the vigorous support of the principle of consolidated schools.

What have proven to be very important educational features are the different courses open to women through the Women's Institute, as Home Nursing, Domestic Science, Sewing, etc., together with demonstrations and lectures. The Institute has greatly contributed to the dissemination of knowledge by distributing free literature, by its Moving Picture Bureau, by travelling libraries and exhibits.

The knowledge and experience women have gained through the Institute has made them of inestimable value on school boards, where their opinions carry much weight. They are now welcomed in positions where formerly the idea of co-operation would have been resented or received with ridicule. It is, therefore, due to the Women's Institute that woman has taken her proper place and exerted her great influence, not only in the home, where she must ever remain the most important factor, but in everything in which the interests of women and children are concerned. As that includes almost every walk of life, women are now taking a share, or an interest, in everything. Her chief concern, however, will always centre around the well-kept home, the proper care and education of children, and the making of our community and our country a God-fearing, law-abiding land, the best in the world for her children to dwell in, and back of her will always be the Women's Institute to advise, to educate and to encourage.

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## FOR HOME AND COUNTRY.

Mrs. Geo. Edwards, Komoka, President of the Federated Institutes of Ontario.

Once again the loom of time has woven another year of Institute work into history, and we are standing upon the threshold of a new year. With pride we look back over the years that lie behind up to the present time. From so small a beginning we have become world-wide in our work and our organization is looked upon by all other organizations as one that has accomplished much, and can be depended upon to assist in all work pertaining to home and country, and the uplift of humanity.

It also gives me joy indeed to be able to announce to you the fact that the increase in our organization has been truly wonderful during the past year. To-day we have one thousand branches in good old Ontario instead of the nine hundred and thirty we so often quoted, and practically all of them have been organized without assistance from the Department, with the exception of literature and advice.

The possibilities of the Women's Institute are simply boundless. Twenty-five years ago, when the Institute first came into existence, it was little thought that expansion would be so great. The longer we have gone on in the work the more we see the need of going on. As women we no longer sit in the back seat, but have stepped out into the great social fields of service to do our part in the work of uplifting the race and making our contribution toward the constructive policies for safeguarding the nation. Home and Canada is the predominating thought of our Institutes to-day. King George has said, "No nation can rise above the level of its homes," and we know no home can rise above the level of its homemaker. In every detail of homemaking, however small, we are nation building, for the home is the place where citizenship is taught. Nationmaking itself is simply homemaking on a larger scale, and as I look into the faces of this large delegation before me I see written there, "We will protect and maintain the moral standard of our nation's homes, not for ourselves only, but for future generations." Future Canada is not only being rocked in the cradles of to-day. The stranger within our gates, what of him or her? Some sixty nationalities are represented; a hundred or more languages are spoken. Our work is

indeed great. We want all the people within our boundaries to *think Canadian, see Canadian and live good Canadian lives.* One good author has said "reverence for the law should be breathed by every mother to the child who prattles at her knee."

"I am God's great instrument for good,
Without me, man is beast,
I am the essence of life's greatest happiness, familyhood.
I shelter the babe in its cradle,
I inspire men to achievement.
I am the foundation of Democracy, the basis of civilization.
Men have fought in my defence,
Nations have prospered by my influence.
Love, Hope, Ambition are nutured by me.
I am balm to the weary, a boon to the happy.
If you wish to partake of all my gifts.
You must have me,
Have me for your very own.
For I can serve you best if I am yours.
I am humanity's greatest benefactor.
I am the Home."

Consider our motto: "Home and Country;" home existing for country, and country for home. How beautifully the word co-operation fits in right here, with the word service binding all together. So with us as members of the Women's Institute, only as we stand together can we accomplish anything. You know the strength of the Allies in the late war was the fact that they had but one soul, a soul for freedom. As homemakers we will be strong and progressive only as we are united in our common bond, "For Home and Country."

Grandmothers' day at Maynard Institute.

We must not forget that when the sailor explorer landed upon the rocky shores of our country, two standards were raised by him, one bearing the banner of his native land, one typifying the Cross of Christianity. A man said not long ago, this world would be a whole lot better if the crowds would cheer for a kind word or good deed the same as they do when Babe Ruth makes a home-run. Let us rouse within ourselves the iron wills of our heroic forefathers, and pray God that He will bestow upon us the undying courage to uphold Christianity until right shall triumph throughout the world—not that we wish to have our names written in halls of fame, or emblazoned in letters of gold, but just to be remembered by something we have done.

## EASTERN ONTARIO CONVENTION HONOURED BY LADY BYNG.

Her Excellency the Lady Byng of Vimy, after expressing her appreciation of the invitation to be present and speak at a Canadian Women's Institutes Convention, said she had come to Canada to learn, especially from Ontario, the mother of the Institute movement, about Institutes and how to keep them going successfully as this Province had done for twenty-five years. In England they found difficulty in sustaining the interest after three or four years had elapsed. What did the Ontario branches do under such circumstances?

After a lively discussion by the convention, it was agreed to collect for Her Excellency's consideration some reports from the branches and other information showing how the Ontario work had been carried on and what were its underlying sources of strength.

At the close of the evening Her Excellency expressed the desire to shake hands, not only with the officers, but with every delegate present, and a short informal reception brought to a close a session which left a very warm place in the hearts of Eastern Ontario homemakers for the new mistress of Government House.

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## MRS. COCKSHUTT WELCOMES THE DELEGATES AT THE CENTRAL CONVENTION.

A very pleasing feature of the Central Convention was an address of welcome from Mrs. Cockshutt, wife of the Lieutenant-Governor. In a characteristically, gracious and practical way, Mrs. Cockshutt said that an organization like the Women's Institute which aims to improve rural homes, which has its roots in the home, but is not bounded by the home, should deserve the support of every Canadian. Mrs. Cockshutt's formal welcome was followed by a very enjoyable reception for the delegates at Government House.

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## THE FIELD OF THE WOMEN'S INSTITUTES.

Mrs. R. H. Grant, Hazeldean.

In reply to an address of welcome by Mrs. Thorburn, at the Ottawa Convention, Mrs. Grant said: "In thanking you for the address of welcome, I wish to say that the success of the Women's Institutes everywhere is something we have reason to be proud of. The movement was formed long before the franchise was conferred upon women, and when some people, wise and otherwise, supposed that the sex had no capacity for business and no ability to organize. But events have proved the contrary. The Institutes found work to do that had formerly been poorly done, or had been wholly neglected. They fulfilled from the first a useful purpose and the praises that have been bestowed upon us have not turned our heads. Instead of declaring a sort of war between the sexes, a worthy and beneficial competition has been set up. Institute criticisms have been helpful, not destructive, and the desire has been to show energy and initiative.

The Institutes have tried to solve many questions affecting the home, the school and the welfare of children. The pressure of modern life has begun to

put a severe strain upon church, home and school. Existence has been more strenuous than in any previous generation; the social system is more complicated than ever before, and what is of vital importance to young people, there are more temptations. There is a great work for the Institutes in all these directions. Our aims are constructive. It is easy to criticise and to leave the world no better than you found it, but the Institutes are inspired by different motives, and their achievements have won respect and confidence, because our suggestions have aimed at the sensible and practical, touching upon the real things of life and trying to find remedies for what is amiss. A new organization was needed and ours has supplied it. In our opinion, community life owes more to the work of Women's Institutes than to any other agency.

The place of women in the modern world is only in process of full development. There is the duty conferred upon us by the franchise. In this country it was secured, not after a bitter agitation, but because public opinion was generally in favour of it. Already people are wondering what we will do with it. In England just now and also in Ontario, the women's vote is keeping the politicians guessing. That will not do them any harm. The more guessing they do the greater should be their efforts to pass good legislation and to keep country before party. As the women's vote has now to be reckoned with we may reasonably hope that the Institutes have set a good example in avoiding old issues that have little meaning and in devoting their time and energy to substantial reforms and improvements.

In the field of education, progress has been helped by the members of the Institutes all over the Province. Next year for the first time in rural communities married women are to vote in school elections. For several years women have been eligible to serve as school trustees, but could not vote for a woman trustee. This was a most illogical arrangement. It was partly remedied by the Legislature this year in the amended Municipal Act, so that our married women and their sons, whether assessed or not, can vote. This would seem to rule out farmers' daughters, and if so, I hope the Schools Act can be so amended as to give the right to the daughters of the farm. Already, so I am informed, women trustees have rendered excellent service in school matters, and as you all know, the Department of Education is enthusiastic in its tributes to the help which the Institutes have rendered in all matters where they can supplement the efforts of the teachers to make school life more attractive, and also more productive. Whether we get a great body of women trustees in the next few years or not, the work left for the Institutes to do in education will be considerable, and none of your efforts should be relaxed in this direction.

In one sense Women's Institutes are only at the outset of their career. New problems are arising every day. Future legislation must be on a broader basis, and we shall expect the law-makers to put social welfare as a whole in the first place, and to realize that women, as a sex, want to see a lot of useless questions given respectable funerals. This convention, like its predecessors, will have the same object in view, and that is to add something to the comfort and happiness of each locality, and thereby contribute to national prosperity."

## THE WORK OF RURAL WOMAN.

Mrs. Chas. Macoun, Campbellford,
Secretary of The Federated Institutes of Ontario.

"To be jack of all trades is to be master of none." This may be true with the exception of two professions, namely, agriculture and homemaking; here the opposite is true. One must be master of all trades and jack of none.

The agriculturist must have a knowledge of botany, chemistry, medicine, politics, law, and be a financier of the highest order in order to make 80c. wheat pay $1.50 bills.

The homemaker, likewise, must have unbounded knowledge, must be first, a dietition, medical practitioner, financier, horticulturist and landscape gardener. The success of the home or family depends to a great extent upon the health of that family, and the homemaker is the one who safeguards that health, and when through accident the health suffers, she is the nurse who restores it. She must be able to finance, for her calls are many, she must know the value of money and the best ways to invest it.

Institutes need not be handicapped for a place to hold courses, if there is a vacant house in the neighbourhood. Sewing courses were conducted in these houses at Omagh and Aughrim.

If her home is to be more than a stopping place, to her falls the work of horticulture and landscape gardener. This many times is a feature in which many rural homes are wanting. Man's idea may be a potato patch for economic reasons, but this is not woman's ideal. Trees, flowers, hedges properly arranged, arranged to give the best effect with backgrounds of trees and shrubs, do much to make an artistic home. This does not mean beds all over the lawn in so many circles and curves that the one whose privilege it is to push the lawn mower will suffer from dizziness. A clear sward of green with flowers grouped against the house or walls appears much better.

After this she must find time for study, personal recreation, and for community work. She must find time to acquaint herself with not only current events but the best of what time has accumulated.

She must look well to her own possessions. Truly we are valued at the value we place upon ourselves. "Our valuation of ourselves is that upon which we are rated." Our face value as it were is the value which the outside world gives to us. "We need be sensible as well as sensitive." Sometimes the criticism is heard, city people look down upon rural women. This is not the fault of the city people, it is the fault of rural women who have not drawn, as it were, their cheque for as high a value as needs be. Aim to be intelligent along your line, to be an expert, be it what it may, and your bank account of respect grows

accordingly. To be serenely happy we all need a hobby; be it chickens, flowers, fruit, fancy sewing, or any other line we need, and to see that our hobby is the first prize one.

A woman's work is to hold her position and to attain her ideals for herself. To possess charm she must pay attention to personal attractiveness and dress, as well as to charm of mind. It is her right to possess an amount of earnings as her personal possession to do with as pleases her ladyship.

She must see that children have rightful position, a proper home, music, flowers, books, and comforts suitable to their home conditions.

The rural woman must possess time for community work in school, society, church, social service, etc., and all that relates of welfare, community life, remembering that all acts of community reflect upon ourselves and our homes.

It is her work in society to bring influence to bear upon all questions of reform and to discuss them intelligently, be these mental deficiency, temperance, social evils. A member of the Women's Institute is afforded great opportunity along such lines: In school: the establishment of more sanitary conditions, better decorations, installing drinking fountains, providing hot lunch, giving assistance to rural fairs, establishing recreation grounds and providing means by which children may enjoy them.

In the community we have an opportunity to provide hall, ground, social entertainments, lectures, and entertainments of high ideals, to have a wide vision and to lead others to see it. We have opportunity to teach respect for Britain and British customs especially when singing. We must not only pay respect ourselves but teach all that we should stand as a soldier at attention when singing our National Anthem. We so often see people putting on coats, gossiping, or rushing out. This should not be.

As homemakers we should not overlook the responsibility to enable the young men of our rural district to establish homes of their own. Too often the boys must marry and bring their wives to live in a home already with two or three heads in it, or as one young woman said, "Marry the whole family, or wait till John's or James' steps are tottering with age before he may have a home of his own, and this only when parents have done with wordly possessions and gone to their reward." This should not be because if young men become dissatisfied and leave home many drift into ways which do not speak for future happiness. Let us give young people a chance. We may not be able, as it were, to keep up with the Joneses, but let us do the best we can for our young people of Canada. Mothers-in-law and daughters-in-law are more frequent in rural districts, and I would say here we need patience in all our dealings. Mothers must remember the girl has given up much and sacrificed much of her young life. Daughter, be courteous for the parents are sacrificing much more for you.

A great work of women to-day is to teach the young the value of pure homes and home life, and that a man's riches consist not in the abundance of the things which he possesseth, but in a simple life, broadened intelligence, better social and home conditions and customs.

We can do much to stem the tides of disrepect and laxity in social life, and when all is done although we may leave some footprints, we can say with Cecil Rhodes: "So much to do; so little done."

The greatest work of rural women to-day is to bring themselves and others to see that the great need of the day is not greater production alone, but production of a better quality of goods and of uniform grade and to see that prosperity depends upon not how much but how good.

Let us use our utmost endeavour to again be the best customer and provider

Britain has, and thus add millions to Canada's coffers. This means prosperity to all. The welfare of all depends on the spending ability of the agriculturist, and this ability to spend means better homes with labour saving devices for all; better schools with higher intelligence among the masses; better churches with better morals. Immorals usually follow in the track of want. All mean a better Ontario.

Ontario had advantages enjoyed by no other Province in Canada and shall we say by no other country in the world? Fruits, grains, natural resources, railroads, and people from good old pioneer stock, and why not means to enjoy these advantages? One thing is necessary, to learn to produce the quality, and Britain is ready to do her part.

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## THE BENEFITS OF FEDERATION.

Mrs. Todd, President Federated Women's Institutes of Canada, pointed out that age had its dangers; because we were the mother Province, we were apt to think that what had been good enough in the past would still serve. In the past in rural Ontario there was no rural organization but the Women's Institutes. To-day that is not the case, and with societies, as with individuals, the fittest would (and should) survive. We were only as strong as our weakest part, and while the service rendered by the Women's Institutes was a magnificent total, she instanced, from personal experience, where lack of business principles meant public loss in that the excellent and varied service supplied by the department was not made available to a whole community. "Federation" meant strength to the weakest branch. Briefly, Mrs. Todd spoke of the provinces, all pioneering in a national organization. From east to west there was the utmost loyalty to the vision which brought them together for "Home and Country" in 1919. British Columbia was just now reorganizing their provincial body after studying the whole question for two years; Ontario had plunged into federation in 1919, and was still loyal to the ideal.

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## THE HOMEMAKER'S CREED.

By Miss Helen MacDougall, Superintendent of Nova Scotia Institutes, Truro, N.S.

In bringing greetings from the Women's Institutes of Nova Scotia, to the convention at Toronto, Miss Helen MacDougall quoted the "Home Bureau Creed" by Ruby Green Smith.

"To maintain the highest ideals of home life, to count children the most important of possessions; to so mother them that their bodies may be sound, their minds clear, their spirit happy and their characters generous; to place service above comfort; to let loyalty to high purposes silence discordant notes; to be discouraged, never; to lose self in generous enthusiasms; to extend to the less fortunate a helping hand; to believe that one's own community may become the best of communities; and to unite with others for the common ends of a more abundant home and community life. This is what the Women's Institute offers to you."

## THE ONTARIO INSTITUTES OF TO-DAY AND A FORECAST OF THEIR TOMORROW.

Mrs. Laura Rose Stephen, Huntingdon, Que.

Mrs. Stephen, who was a regular lecturer to the Farmers' Institutes before the Women's Institutes were formed, was one of the first and most acceptable to give service to the Women's Organization. After referring to the splendid foundation laid in the beginning, and the development of the work, Mrs. Stephen dwelt upon the larger interests.

This larger interest in outside concerns has brought to our ranks many women of high intellectual calibre and eager to serve in some public capacity—women with a vision of greater and better things for Canada. In the present-day institutes of Ontario we find scores of just such women and they are doing splendid work. The personnel of our Institutes is proof of the esteem and value placed on our organization. The road travelled by the Institutes is invariably a smooth one and the reason why is that we have tactfully kept from being meddlesome. When reforms are necessary, in a quiet, gracious manner a committee of institute women wait on the powers that be, and seldom is their mission in vain. It is this attitude of earnest desire to do good in every possible way that has enlisted the sympathy and good will of the men—for throughout Ontario the men are our staunch supporters. I find them wherever I travel willing to help in every way, stopping their work to drive the women to the meetings, choring about at picnics, conventions, etc.

After a reference to the cosmopolitan character of the Institutes and their statics as community spheres, Mrs. Stephen continued:

When I attend a district convention and listen to the reports I am filled with pride and amazement at what has been accomplished by the women of our Institutes. The bigger and harder the undertaking the more eager do the women seem to grapple with it, nothing daunts them. Where men fall down on the job, the women of the Institute step forward and carry on to a successful finish. Many a worthy cause would go by the board were it not mothered by the Institute. Great improvement is noticeable in the proceedings of the monthly meetings. Parliamentary rules are being better understood and enforced.

I have visited Institutes formed over twenty years ago to find them still vigorous and keeping to the fore in every respect.

It is gratifying to think of how from the parent Institute of Ontario the movement has spread far and wide. Only yesterday I received a letter from a cousin living at Banbury, Oxfordshire, England, and in it she said: "We have a Women's Institute here, which I have joined, have about forty members. We have just been making twenty-four dozen coloured raffia mats for the table to be sold in London. We have learned how to make gloves, baskets, slippers and dress skins. We have some very interesting lectures and nice meetings. In the summer we go by motor to other village Institutes, and at Christmas time we have a party at the Institute room, when each member may invite a friend. The other day we had Mrs. Jarley's wax works. It caused great amusement. I was Mr. Pickwick's housekeeper."

What may we hope for from the Institutes of old Ontario? Greater and still greater things. We have now among our ranks women who from early girlhood have been educated in Institute work. They are most capable and not only have they the ability but an earnest willingness to work. I feel assured that more and more will our efforts be directed toward a better and fuller under-

standing of child life. Our nation's advancement is dependent upon the health and morals of our youth. We can never err in devoting time to develop a higher standard for our boys and girls.

The Institute of the future will take a deeper interest in the art and literature of our own people and do all in its power to exploit any promising genius. The country's natural resources are frequently developed by public funds. Why should not extraordinary individual mental resources also receive recognition and help, and the Institute members are in a position to find out the obscure talent and bring it into the light. Too often in cases of outstanding ability.

"Chill penury repressed their noble rage,
And froze the genial current of the soul."

Ontario has gotten beyond the toil-worn pioneer stage and must now give more thought and time to the aesthetic. The beautifying of our highways and public grounds will be more generally taken in hand by our Institutes and our land will take on the charm of England that so pleases the eye.

There is much work to be done for our homes and for our country. Doors of needed reforms that are yet to be opened, and a more rigorous guard against the evils that still lurk in dark corners, or those that flaunt themselves before our very eyes will receive attention from our organization. Our Institutes, if our homes with their dear ones are to be safe, must stand firm on all moral issues. The vote has given us a real and telling power and we must use this privilege with prayerful decision. Our Institute stands for the best that can be conceived in the minds of the best women of our land and it is for us members to look ahead and with faith in ourselves and our undertakings go forward toward the light of that which is good and useful and noble.

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## OBSERVATIONS AND CONCLUSIONS OF AN INSTITUTE DELEGATE

Dr. Anna Ross, Macdonald Institute.

It is in the month of May or June that we who are asked to visit the Women's Institutes of Ontario as delegates from the Department of Agriculture start out. Our route is mapped out for us by the Department, the subjects upon which we are to speak have long since been decided upon, and with "Information and directions from the Department," we are ready to take to the open road.

The journey through rural Ontario in spring is a delight to the eye; the shaded browns of newly ploughed land, the tinted greens of grass and of grain, the blossoms of the fruit trees all conspire. Have you seen an apple orchard as it blossoms in May, an Ontario apple orchard as it blooms in lovely May? I have looked at the mountains of Bavaria, and on the slopes of sunny France, and the highlands of Scotland, but I have seen nothing more fair than Ontario orchards in blossom time.

However delightful the day, there is an end to the journey and there is a meeting to face; so read again the secretary's letter. Those splendid letters that we get, in response to our enquiries, from splendid secretaries, are as business-like as telegrams, and so explicit in their directions that the wayfaring woman, though a fool, may not err in following. I wish I might publish a sample copy. It would run something like this: "You are expected to visit our Institute meeting—hour—day—date. You will in all probability arrive by the —— train. Your hostess is ——. The subject we wish you to speak on is ——. We are specially interested in ——. Arrangements are being made for you to go on to the next branch meeting, the day following our meeting, etc." Do you wonder

that the delegate blesses the secretary who has thus prepared the way? (Tell it not in Gath, publish it not among the Philistines—but there are secretaries who do not send any such letters).

When we arrive and meet our hostess, then we get into touch with the interests of the community; the hostess furnishes the point of contact. I used to think that entertaining the delegate must prove an unqualified nuisance to the members of Institutes. But my experience has made me forget that aspect of the occasion. Such gracious hospitality, such kind consideration as we receive, only one who has come as a stranger can appreciate. It is our hostess who gives us the "right slant" for the meeting, who wishes us to do our best and give our best. It is our hostess who frankly says, "Do not speak too long; we like to get home early," or "Tell us something up-to-date," or "Do not talk about the medical inspection of schools, we've been fed up on that," etc., etc. Yes, our hostess proves the friend in need to whom we reluctantly say, "Good-night," feeling the truth of the words, "And you find at the close of a perfect day the soul of a friend you have made."

The programme of the year's work of an Institute is always interesting. Many Institutes have the year's programmes printed in leaflet form, and very attractive they are, comprehensive in their range of subjects and as intensive as the individual member succeeds in making the individual topic.

In going through the province as the Institute delegate is privileged to do, one cannot refrain from observing the lamentable waste of resources, both natural resources and human resources. To illustrate what I mean: I know a wooded valley with a stream flowing through, that is rich in bird life. Many varieties of birds abound in these woods, and yet the school boys and girls of the district know the names of about half a dozen birds, the others they speak of as "some sort of sparrow." Is not this a waste of excellent cultural material?

The waste of natural talent, especially the unrecognized talent of the young people, and the undirected energies of the girls and boys, is surely a subject for serious thought. Ability is not restricted to the homes of the rich and the great, but often opportunity is. If the influence of one good woman resembles the fragrance of a beautiful flower, might not the influence of a group of women brought together for home and country create, not an atmosphere but a climate, a climate in which natural talents and youthful aspirations would grow and flourish?

The efficient officers of our Institutes have no easy task. I had often heard it said that the efficient president did nothing herself, but had all the others working. I have not yet met that president. The woman who can keep others at work must be awake at nights planning how. It is not more ability that most women need, but the faculty of using what they have. The old adage of our superintendent to "Use what you have before you ask for more," is a good rule. It is this using what we have, that "gets" most of us. The greatest of mistakes is for a woman to do nothing because she can do but very little. The tragedy of life is not to be limited to one talent, but to fail to use that talent. To lead others involves effort and self-denial, but it is the law of service that all that a woman sends into the lives of others returns to enrich her own life. It is beautiful to observe this law being worked out in the lives of women, who, giving what they have to promote human welfare, are rewarded by receiving the clearer vision and the deeper knowledge which enables them to give more. She that loses her life finds it.

It is interesting to observe the various standards by which progress is measured as shown in the replies to the question: "What progress are you

making this year?" In some places, the reply is in terms of members added to the roll during the year; we conclude that progress is measured by numbers. In some places the reply is in terms of money raised during the year; we conclude that progress is measured in dollars and cents. In some places the reply concerns the work done by the members, and we conclude that progress is measured by work accomplished. But there are other replies that indicate a more subtle standard by which to measure progress; let me quote some answers I have received. One from an old gentleman who was discussing with me Institute work, he observed: "This is a better place to bring up children since the Institute started." Another from an officer of an Institute, "We are a little wiser than we were last year, and we understand one another better." After all, in the last analysis progress is measured in terms of human welfare and numbers and money and work are but a means to this end.

## ORGANIZING IN NEW CENTRES.

Mrs. Jos. McLennan, R.R. No. 2, Sarnia.

How many of us have a map of our district, and how many of us have that map hanging in the most conspicuous place at our annual district meeting?

It is absolutely essential that you have this, if you are to study the field and discover new centres. Your district president will know her field no doubt; but until each officer, each director and each individual member knows the exact location of every branch, new centres will never be organized.

Endeavour then, before next annual meeting, to have such a map, and with each branch correctly marked and named, and, with this before you, plan an organizing campaign. Offer a prize at your School Fair for the best of such maps if you cannot secure it any other way, and you will have one for each branch as well.

Next, search out those localities which thus far have been neglected. The neglect is not with the Department, but with ourselves. Have your branches devote a meeting to this matter. Get them to arrange to visit these districts and put on one of their best programmes.

Each woman here knows what wonderful advantages come to the individual and to the neighbourhood, to the town and to the city, for the value of the Women's Institutes cannot be estimated. Wherever you go, you will find results—in rest rooms, parks, school grounds, medical inspection, community halls. We dare not withhold what others have given to us, for someone organized the work in our locality. Let us share then and pass along this wonderful gift, that in other places the individual may be developed, the educational standards may be raised, and community life be made better by providing facilities for amusement and social intercourse.

Our new and splendid hand book will tell you exactly how to proceed. Do not be satisfied with one or two in each township, or the real needs of your township will never be attained, as there can be no such thing as co-ordinating effort, where several branches may co-operate to attain some particular end. Members mean strength, and public opinion throughout the whole district is behind the effort. In some cases your work will seem strenuous, perhaps even discouraging, while again you will find your field prepared for you before you arrive.

How much effort, how much of sacrifice do we really put into our Institute work? We accept our privileges so contentedly. Shall we not make the coming year one of enthusiastic effort throughout Western Ontario, in a new campaign of organization in every centre available?

## THE BRANCH INSTITUTE FROM A RURAL WOMAN'S VIEWPOINT.

Mrs. A. J. Stewart, Devlin.

I will endeavour to show you what a branch Institute means from a rural woman's viewpoint Just a few words on the origin of our splendid organization. The Women's Institute was founded by a Mrs. Hoodless, of Hamilton, Ont., some twenty-five years ago. The death of her little child was so keenly felt that her heart full of grief went out to the lonely women of the rural districts whom she felt needed sympathy and companionship like herself in her hour of trial.

Founded as it was on love and sympathy, need one wonder why it takes such a maternal interest in the welfare of the mother and child, the foundation of the home and the hope of future society. The first meeting was held at Stoney Creek, the 19th of February, 1897, and was attended by a small gathering of rural women, and to-day in Ontario alone we have somewhere in the neighbourhood of 30,000 members, including rural and urban women.

In speaking of a branch Institute I always like to think of it as a big splendid family circle, in which each member is entitled to voice her opinions and receive due consideration. The rural woman, to use a homely phrase, is "rather backward in coming forward," but once she becomes an Institute member she loses that self-consciousness to a certain extent and after acting on committees, taking part in debates, and preparing papers for a meeting, she feels capable of shouldering a great many responsibilities.

Self control is one of many of the good things acquired by becoming an Institute member. Picture a woman on a homestead probably only a few miles from a neighbour. She is possibly of a retiring disposition—not a good mixer, or else one of those "hard to get acquainted with kind." As she does not care for company the neighbours say, "Oh, Mrs. So-and-So wouldn't go to such a place, we won't bother asking her." So she is left pretty much to herself. She may have been a very clever little soul before she became isolated on that homestead, and having no congenial company she loses all interest in the community—gets into a rut and there she stays.

In the meantime the Women's Institute is organized in her neighbourhood and like all progressive branches they want every woman in the district to become a member. They immediately invite her to a meeting, even arranging for a member to bring her there, so she will have no excuse for not attending. She goes to the meeting, hears community news or sees a demonstration; possibly how to make and use a fireless cooker or a "first aid" demonstration, or exchanges recipes, and spends a social afternoon with other women. She returns home much refreshed in mind and body, takes a new interest in what is going on around her, and the first thing we know she is "up and doing with a heart for any fate" and becomes one of the community builders.

I think we should aim to have a demonstration at every monthly meeting. It is one of the greatest incentives to an increased membership, especially among the young people, whom I am sorry to say, in some localities do not seem to take the interest the older folks do. A demonstration makes a more lasting impression as to how something is performed than all the papers written on the subject. Short courses can also be had from the Department for the asking, and why not go right after them?

Speaking of those of the younger set not so keenly interested in our work, I should like to hear a discussion during this convention on "How to get and keep our young girls interested in the Institute."

The rural woman looks forward to a monthly meeting as a real holiday. Our city sisters may smile at that statement, but come out to the country—away back to a homestead—and for twenty-nine days in a month help to clear land. Well, I assure you a half-holiday would look good to you. I remember hearing a very active worker in our branch say that she did two days work in one in order to be free for the meeting day. It is nearly ten years since I became an Institute member—joining up with the then called "Lavellee-Devlin" branch, and I can assure you ladies that I am looking forward to our meeting next Wednesday just as eagerly as I did to the monthly meeting ten years ago.

The Institute helps us to broaden our views, and to sympathize with the lives and work of others. Don't you think it is splendid to know there are twenty-nine thousand women in Ontario alone working for our great organization, and receiving every assistance from our superintendent, Mr. Putnam, whom we have the honour of having with us here to-day.

The Women's Institute is an organization that takes in all creeds and classes. There are to my mind only three essentials required to become an Institute member, namely—responsibility, dependability, and your yearly fee of twenty-five cents. "When renewing your membership bring in a new member," should be a branch slogan.

One thing I should like to say to the branches before closing in regard to something which is gradually creeping in, and which we want to keep out—criticism. Criticism is to my mind a splendid thing, if it is informative and constructive, and not a mere complaint. Like nurses, critics are born not made. John B. Kennedy, editor of the Columbian, says, "A critic should remember that he is the champion of a standard, and if he does not know what the standard should be of the person or work he criticises, he can escape criticism himself only by refraining from criticising others." In conclusion let me say in the words of the Scottish poet, Evan McColl:

"Let us then in loving mood,
Each help each through life's short span;
If we can't do all we would
Let us do the best we can."

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## THE INSTITUTE AND COMMUNITY WORK.

ELIZABETH CRONE, MANDAUMIN.

The motto of the Women's Institute is "For Home and Country," but we do not live in homes any more; we have not time. We eat and sleep and work there, but we live in communities. So it is up to us now to see that our standard of community life comes up to the high standard we have always held for home life, the very best that we can make it. Our homemakers should be the moulders of our community life.

Let us begin where our rural community life begins, in our rural schools, and first let us get away from that delusion we have loved so long, that we have a wonderful educational system and a fine set of schools. Our rural schools have not kept up with the development of our rural life, while they should have been leading it.

If you were driving along a country road and saw a cheerless looking building, sitting dejectedly in a yard which looked like a small hay-field with a border of thistles or burs and a few straggling flowers in front, would you have to ask anyone what it was? I know they are not all like that. I have seen many a rural school which was a credit to the community in which it stood, a well kept building with a mown lawn, with shade trees, shrubs and flowers; but these make your heart sorrier over the other type, which is, I fear, still in the majority. Should not the schools which house the children for whom we try to make attractive homes, come up to the standard of those homes? Paint has the same rejuvenating effect there as at home; trees and shrubs add the same beauty, and flowers are as easily grown; there are more hands to tend them and no chickens to scratch them out.

And what about the inside of our schools? Have you been in yours lately? Is it as clean as your kitchen? Can any of you tell me why a kitchen floor needs to be cleansed so often while the floor at school, where twenty or thirty children run in and out and live and move and have their being, and, incidentally, eat their lunch, needs to be cleaned only four times a year? According to the law, the school must be cleaned four times a year, but it is not against the law to clean it oftener. Are there basins and paper towels in your school? Those grimy little hands which must be washed before dinner at home need washing before handling the lunch at school.

Do the children sit with cold feet half the forenoon, or have you an efficient heating and ventilating system?

Are the walls redecorated as often as they are at home and in as pleasing shades? Are they hung with framed prints of good pictures, or are they hung with last year's calendars and ancient relics of the Royal Family? If not already there, there is room in your school for two or three dozen pictures in different sizes.

What about a hot lunch? We wouldn't let the children sit down at home in the winter time to eat a cold lunch and drink cold water with it, especially if they had tramped a mile or two through the snow. A hot lunch, too, might solve the problem of having the teacher at school at noon to supervise the children's play. Most of the things which happen at school which should not happen are caused by lack of supervision at noon and lack of organized games.

Our course of study is not without its faults. Some of our most important subjects, music, domestic science and agriculture are still optional. You say there is not time for them? If equal in importance, why should they not have their share of time? Take the first named, for instance. As an educational subject, music stands in the first rank, and what subject could pupils make more use of after leaving school? Yet I know one school where the children have not sung at all for six or seven years. Children can be taught sight singing as easily as they can be taught to read English. It is taught in the Normal Schools and summer courses are provided also for the teacher. If the teacher cannot sing at all it is sometimes possible to get some one from the section to come in once or twice a week.

There always will be, as there is now, a dearth of music in country districts until it is taken up in the schools. There might be better work done if there were a music supervisor for each township or for a group of schools, and if the Institute wished to do something for the young people who have left school they might get that supervisor to conduct a Singing School in their Community Hall or in some other suitable place. In some places the question of piano

lessons for country children has been solved by some organization renting a piano and arranging to have a teacher come from a near by town one or two days in the week.

I have more faith in rural schools being improved through our Women's Institute than through any other organization, because it is so largely made up of mothers. We have not meant to neglect our schools; we have just got used to them being as they are. We have been too patient. While the care and training of the children in the home has been left largely in the hands of the mothers, the management of school affairs has been left in the hands of the men, and men, not being the natural homemakers at school any more than at home, have considered too largely the business end of it. Improvements at school cost money; so they do at home, and there are more people to pay for the improvement at school.

If the Institute could get the women to turn out to the annual meeting, and speak their minds when they get there, the same as they do at home, remembering it is for their children, or somebody else's children (it's all the same thing in community work) and if the Institute members would get one of the most sensible of their members on the school board, there would be better days ahead for our rural schools.

Another great educational factor which the Institute may help along is the public library. One is needed in every community centre. Mandamin is so small it has no dimensions at all—it is just the centre of a circle—yet it has a library of fifteen hundred volumes, and you'll read of others like it and better in the Library Review.

To insure the permanency of a library in a rural district where the population is constantly changing, look well to the juvenile section. The juvenile readers of to-day will be serving on the library board to-morrow. To make it easy for the children to get books place an extension of the juvenile section in the nearest schools. A box of books, fifty per cent. non-fiction, placed in the care of the teacher once a month, will reach children who would never think of coming to the library, and will stimulate interest in the library in the homes of the children. The library mentioned is kept up on the government grants and on the membership fees, one dollar a year per family.

To make good use of a Community Hall, or any hall which may be used for that purpose, the community needs to be well organized. In some of our country districts where there is so much to be done and so few to do it, we are so over-organized that it is sometimes hard to remember whether we are president, secretary, or vice-president of this or that organization.

We have tried to overcome this by amalgamating several of our societies into a community club made up of several sections. Ours is a Church Community Club; it was organized and is supervised by the church and meets in the church hall, but in a community where this is not being done the work might well be looked after by the Women's Institute. You see I have a notion *that the work of the Institute is to do whatever needs doing and is not being done.*

In our club we have an honorary president whose duty is to do half the work or see that it is done, a president, secretary and treasurer, and a vice-president for each section—the literary, summer sports, winter sports and dramatic. Each section looks after its own activities, but finances and business affecting the club as a whole is looked after by the club executive.

The literary section holds during the fall and winter, a literary, educational and social evening each month, the dramatic section using one evening for general practice in dramatics. At these meetings we have debates, lectures,

practice in public speaking, moving pictures and games. Last winter we had a good series of lectures on "Choosing a Vocation." We had a representative from several professions, a doctor, stenographer, nurse, teacher, chemist, dentist, O.A.C. graduate, minister and others give the educational requirements, cost of training, value of training, chances of promotion, opportunities for service and life interest in connection with their work. The information is of value to both young people and their parents, and besides that it is broadening; it does one good to have a look into the other fellow's work; we are not so apt to criticize.

The summer sports section have athletic grounds with space for two tennis courts, croquet, quoits, basketball and children's playground and, just outside the grounds, a baseball diamond for the men's and girls' baseball teams.

At one time it was thought people in the country did not have time for sport, but during the last two or three years a wave of athletics has swept the rural districts. Our grounds were alive with people almost every fine evening this summer and especially when league games were on.

On field day about four hundred left their fields and kitchens for the afternoon sports, and stayed for or came back to the evening entertainment at which the dramatic section put on a play on an outdoor stage, followed by a contest in elocution, moving pictures and fireworks.

The club being organized on the principle of a sectional bookcase, we can add a new section whenever we feel the need. We're hoping in the spring to add a horticultural section, to plant the atheltic grounds and church grounds and to stimulate interest in the culture of flowers at home by having a competition in flower growing and an exhibition on field day. This section will join with the horticultural society in the nearest town and the work should form a link of sympathy between town and country.

A great many Institutes are doing fine work in beautifying country cemeteries, a work which had been sadly neglected before the Institutes took it up. A nation cannot afford to neglect the graves of the pioneers any more than it can neglect its soldiers' graves. Our soldiers' died for their country; our pioneers lived for it, and their resting place should not be a desolate waste.

The question of finance has been met by some of the Institutes who are in this work by writing to relatives and friends who have moved to distant parts, asking them to contribute a certain amount each year toward the care of the home cemetery and the response is always generous.

A lot of good work, in the line of beautification of the villages and small towns, has been done by the Institute working in with the local horticultural society.

Let me say in conclusion, in all this community work let us have perseverance and patience, but not too much patience. There will always be people who want things to be done as they always were done, for the very good reason that they always were done that way, but these people act as ballast and help to keep the rest of us from rocking the boat. I do not believe there ever was a good movement started yet but it had opposition; someone said it should not be done or it could not be done or it would not last. But if a thing is worth doing it *can* be done and it *will* last.

Keep your waggon hitched to a star even though its wheels are in the mud; and, if you are headed in the right direction, you will eventually pull out.

## ORGANIZED PLAY IN THE COUNTRY.

Mrs. M. J. Nixon, Sault Ste. Marie.

For purposes of organization for recreation and sports, children may be divided broadly into three age groups, namely: Those from five to seven, those from eight to ten, and those of eleven years of age and upwards. Children from five to seven enjoy games of imitation, action and songs. They like to pretend they are dogs, horses, trains, farmers, etc. From the ages of eight to ten, the children prefer a more advanced form of play—racing and similar games in which the spirit of rivalry and contest is introduced. Not only does the child strive for his success, but by forming one of a group—all perhaps having the same aim in view, the instinct of co-operation and organization begin to develop. From eleven years of age upwards there appears a desire for more advanced and organized play. The boy or girl strives to excel individually, and the social or team instinct expresses itself more strongly. The above classification must be taken into consideration in the selecting and organization of suitable sports for children of all ages.

Do not reject suggestions from the young people concerned. Utilize their suggestions if possible. If not usable let them be rejected only by group discussion. Lead, not drive.

If a gymnasium is unattainable, perhaps every one of the boys and girls have a haymow and ladders. If we can have a gymnasium, we would like to have the following equipment for girls: A basketball, volley ball, and one or two playground balls, balance team, large ball and bat for soft baseball, better to be gotten one at a time as games requiring them are learned.

Play without leadership is either impossible or valueless. Boys supply their own leadership in part because they know games to play. Girls after twelve years of age do not know how. There must be some one to teach what they do not know, to organize the crowd into the order necessary for pleasure and to give all activities an atmosphere of joy which makes them vital.

The requisites for physical recreation are: First, a leader. Play groups without adult supervision have little value, and may do more harm than good. Training is desirable, but good work may be done by any woman who believes mightily in the value of play, who has enthusiasm and persistence in finding younger and suppler persons to do whatever may be physically difficult for her, and in seeking out all the resources of the community.

The second requirement is a clear space to play in. One can often obtain unused lawns and backyards and vacant lots. Girls may have entertainments to make money for clearing, levelling and buying equipment. Girls must be taught to distinguish between when they are merely tired, and will get a "second wind," and when they are keeping up by nerve only, thus severely over-taxing their natural strength, and to realize that it is not "good sport" either to quit from laziness, or to over-tax themselves.

In general any rivalry, too intense for good humour, should be stopped. The ideal of good sportmanship has to be taught. Its essentials are abiding by the rules of the game and the decision of the umpire; playing for the sake of the game—not for winning at any cost, be it honour, temper, or comradeship; being a good loser, and a graceful, not overbearing, winner.

Some communities arrange to have a man in charge of both boys and girls. This may be the only possibility for girls to master the rules of a new game such as basketball. But the woman leader should always be present to see that the

girls are not overstrained and that every girl has a chance. A leader has, during the course of the games and exercises, a good opportunity to impress upon the girls the care of their bodies, not by set talks, which always make girls shy and uncomfortable, but in a casual and incidental way as the occasion arises naturally, in the comradeship of planning a carrying-on and carrying-out of activities.

In planning recreation, it is well to have, with all ages and sexes, singing together as much as possible, a class or department Glee Club learning to sing, first two, then three parts, is pleasure and service combined. If two or more persons in the community play musical instruments, encourage an orchestra or banjo club. Ukeleles are quite inexpensive and easy to learn and easy to sing with. But above all, if the young people are to get the best out of music they must learn to know and love good music, to discriminate between vulgar, trashy music and the really beautiful. Get good musicians to interpret an immortal piece of music and to give talks on the lives of musicians. Get up an entertainment and make money to buy a victrola for the club and then buy good records.

The dramatic instinct is strongly implanted in all young people. Have a dramatic club. Such an undertaking requires persistence and faithfulness, but is a splendid training in voice culture, overcoming self-consciousness and stimulating inventiveness. The people taking part in the play must live their parts, not act them in a stiff, unnatural manner. Encourage the dramatization of fairy stories and books by the young people themselves.

Organize travel clubs. Meet every two or three weeks and have a leader for the evening, who is to direct the programme for the one evening only. A certain country is chosen as the destination of the travellers, and the topic of discussion for the evening, each member of the club being prepared to tell something of the people, their customs and character, the physical features of the country and its place amongst the other countries of the world to-day.

One big responsibility of the play leader is to forestall rough-housing or the starting of vulgar games. If a game gets too boisterous bring it to a conclusion, and call on the ringleaders to help in some special stunt that will give them sufficient prominence to satisfy their desire to be in the limelight. Afterwards when a suitable opportunity arises talk over with them frankly the proper deportment in a social gathering. Do not preach; get them willingly and frankly to admit their shortcomings themselves.

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## SUPERVISED PLAY IN COMMUNITY HALLS AND PUBLIC SCHOOLS.

Mrs. Walker, Eady.

Last December when our hall was just four months young, and after the community had recovered from the throes of opening it and the bills were all in, the secretary-treasurer of the building committee called all the people of the community together to hear the financial statement. After it was read and approved we elected our trustees for the hall, and also a committee of three to plan a community gathering for January. At the January meeting the first named member of the aforesaid committee dropped out and a new one was elected to take her place. We proceeded in this way until August, each month electing a new member of the programme committee and the one longest on acting as convener. These meetings have been very much enjoyed, and have

been a great educational factor in the community as we have always had in addition to local debates and our budding Paderewskis, Melbas and Carusos some outstanding speaker.

Another feature of our community life is our dances. These are in a class all by themselves, for at them we have fathers, mothers and children and even grandchildren.

At the first, "to dance or not to dance" was a burning question, but our Institute settled the question by giving a dance to the community, and setting a very good example of how things should be done. We used a printed invitation, inside of which was the programme of what dances should be danced, and on the back the names of the women who were hostesses for the evening with their husbands or brothers as a business committees. Our young people think we are a little slow in our choice of dances, but the hall is well lighted, the floor is good and they have no bother about supper, and we older ones are full of hope that some of the silly (to put it mildly) new dances will be sent back to darkest Africa from where they came, before our young people ever learn them. We have the social evening once a month, and the dances only in the winter months.

And now I come to the part that is right next my heart—the supervised dinner hour in country schools. I don't ask for a play teacher or a hot dinner even, though I do think it would help a lot to keep people in the country for I think men would farm even if it is not as well paid as some other professions just for the love of owning broad wind-swept acres, sun kissed and mellow, if their wives would be content. But the mothers knowing only the things that are wrong in the country, and not knowing of the things more wrong in town, decide for the town, and there is another farm "for sale" or "to rent."

Now I know both lives, having only come on the farm after I was twenty-nine, and I have fully made up my mind that the few things I do not like about the country are not going to chase me to town. I am going to just keep at them until I get them corrected.

We need a supervised dinner hour. If play and a hot dinner are added to it, so much the better. My foster daughter was hit with a baseball bat during the dinner hour, dropped and lay in the hot June sun till the teacher came back, and three years ago the occulist told us that her optic nerve was injured and that she would gradually lose her sight. I told this at a meeting of another Institute, and an ex-school teacher told me of a little girl who caught fire at the stove and was burned to death because there was no adult there. Had I the time I could tell you more, and, my friends, these hurts to body are the least of the hurts. What about the things told and taught that hurt and soil the soil, while the children are moping about in the unsupervised dinner hour. Help to protect our dear little Canadian citizens in our country schools.

## EDUCATION AND BETTER SCHOOLS.

Mrs. B. O. Allen, Fort William.

A recent writer on the history of civilization has said, that when the historians of a century or so in the future write of the outstanding social movements of the nineteenth century, they will select as probably the most outstanding of all the rise of the public school. Those who are familiar with the fact of public institutions of learning throughout the other countries of the civilized world, and

throughout the length and breadth of this continent hardly realize how imposing our educational fabric is, so familiar has it become to us all. We view with a very casual eye the phenomenon of some thirty millions of children and youth on this continent, in daily attendance upon courses of study prescribed by the state, in buildings erected at public expense, and under teachers whose salaries are paid out of public money. This, when we think of it, constitutes a remarkable tribute to the efficiency of our democracy as an agency of progress and furnishes all of us with a reasonable ground of hope that the earth is slowly wheeling into the light of a better day.

It is to our educational institutions that, as a whole, we must look for the effective inculcation of that knowledge and breadth of mind in economic matters, of that saneness of view regarding industrial and social relationships; of that sense of justice; that humaneness of feeling; that desire for the practical application of the golden rule in all our communal affairs. It is not the main business of the school to impart the knowledge which is mere information, but it is their business to lay the foundation of, and, as far as opportunity offers, to build in each student who passes through them that sound and sterling character which is manifested in all social relationships by standing four square to every temptation, economic and otherwise.

Women should use her influence to develop the highest educational sentiments. A nation can never rise higher than its women. If we educate a boy we educate an individual, if we educate a girl we educate a whole family, some one has said rightly. In this way women has perhaps her greatest power.

In giving a report on education and better schools it is well to remember that that one of the outstanding problems in educational circles is the condition of the rural school. It is a human characteristic, that we are inclined to concern ourselves with the big and spectacular and neglect the little things. We forget that a combination of little things is very much more influencing than tackling one big thing. For that reason, perhaps for many years, the rural school was neglected, but we are pleased to report progress during the last few years in many respects. Last year's statistics show approximately 5,100 rural one-roomed schools, 890 of that number with an average attendance of ten or less. This contains about forty-five per cent. of the children of the province in attendance at the rural schools. From those figures we see how important the question of rural education is. Our public schools come in for a great deal of criticism, but the most of it never hits the mark. We need sympathetic and constructive criticism in order to get the very best for our schools.

Our educational system, in spite of certain defects, has made progress, and has done such a work as no other agency could have done, but conditions change, and what was good enough for our fathers is not good enough for us in order to compete with this present day period. Progress demands new equipment and new machinery. A manufacturer scraps his machinery, a farmer tears down his barns and builds greater as necessity demands it. No individual to-day can be excused for not investigating the newer features that are being introduced along educational lines, to see what these improvements do in giving a broader education for the many activities of life and in establishing a co-operative spirit in their community.

The Women's Institutes have done a great work in developing health teaching in the schools, establishing medical and dental inspection, hot lunches, obtaining better sanitary conditions, getting a pure water supply. There were over one hundred rural schools serving hot lunches last year. The need of supervision at the noon hour is recognized as never before. Though manual training

has been established twenty-two years in this province, the work is yet far from satisfactory. It is being regarded in only a few localities, and manual training and domestic science are often called the frills. Were it not that we are blinded by custom, no argument is necessary in support of manual training and household science in every school in this country. If we had no school system at all and proceeded to formulate one to meet present needs, we should think of first making the pupils skilful in their every day work of life and then think of books as an aid to this end. Just because in pioneer days we did not need this kind of training in the school, owing to its being secured at home, we have reached the conclusion it is not necessary. It is needed still more urgently to-day, because it is vanishing from the farms, and the avenue to the brain, through the hand, will be unused if the opportunity is not provided in the school. Knowing how to cook and knowing more especially the values of foods are the fundamentals of national health, therefore all encouragement should be given to household science.

The school work that develops the spiritual nature is literature, with its handmaidens, art and music. There is no reason why every child in rural and urban schools should not develop a taste for good literature, art and music. Place it before them in the library, on the walls of the school. Amateur dramatization of literature and history should be encouraged.

The pupil in any school is the centre for consideration. We read much to-day about open air schools for delicate children. In Alberta they have outdoor classes for tubercular children. An outdoor pavilion could be considered when building.

The regular attendance of the pupil is one of the most urgently needed reforms, especially in the rural schools where the truant law is not as well enforced as in urban centres. In advocating free education from the kindergarten to the university, a student of international educational facilities of different countries states that in comparing the wealth of different nations they have found that the state that provides the children with the longest period of education, has the largest output of wealth. In every case educated people produce much and amass wealth while uneducated people produce little and save less.

Following are some things that are needed in the present day reforms: Classes for mental defectives, story telling hours, oral composition still more emphasized, teacher ages in sections where there is consolidation, the school as a community centre, physical training, recreation periods, gymnastic training and rhythmic games, women on school boards, the formation of larger units of administration, preferably township boards, with a view to consolidation and a wider course of study, more attention to the needs of the new Canadians or foreign settlers' children in the newer sections of the province. An ideal school should interpret the course of study in terms of the child's needs as a member of the community in which he lives.

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## RURAL EDUCATION.

Mrs. G. A. Locking, Emo.

The subject of rural education is very far reaching. I will only touch a few points which are attracting attention all over the country. Discussion may perhaps be seeds for new ideals.

There is not time to go into the history of education, interesting as it is, of the struggles of the rural people to attain the right to be educated, and how it was attained. What is your ideal of education? There are three classes of

ideals all well in their place. There is the class who look on education as cultural —the kind which is chiefly polish and purely ornamental. The kind of education which creates a sense of superiority and snobbery. In many senses that is our ideal of education. How often you hear, "Oh, John does not need an education; he's going to farm; Mary will get married." Right here let me make a plea for education for our girls; educate a boy and you educate a man; educate a girl and you may be educating a family. But many girls will not marry due to natural or unnatural causes. They must be fitted to take their place in society along with our young men. From this viewpoint it does not do to associate education with kid gloves, a walking cane and an easy living.

Then there is the utilitarian ideal. The kind of education which teaches boys and girls how to make a living. They place a mercenary value on education, and that is impossible. You cannot measure education by money. Schools of commerce are an excellent thing, but we should not be deluded into thinking that the purpose of education is to turn out merchants of finance rather than men and women with a vision.

Then there is the creative ideal. The school should be a seed-bed where ideals are planted, where boys and girls are taught the art of living together as neighbours in the smaller field, as communities, as countries, and as nations. What the country needs more than anything else in these days of social unrest, is a generation of native born Canadians trained in the manual arts from infancy up, a nation of people who are not afraid to roll up their sleeves and go to work. We must, if we are going to save our civilization, educate our children that all work is honourable. John Ruskin says, "Education is to make people not only do the right thing, but to enjoy right things; not only learned but to love learning; not merely industrious but to love industry; not merely just, but to hunger and thirst after justice."

Education is first, foremost and fundamentally the process of fostering in a child the right spirit, a spirit that is never satisfied but is ever reaching on to know more in order to be more. A man or woman is educated only when they can meet all conditions of life efficiently, and after all, the problems of life are the small things, learning to live together, work together, and play together.

Now, to work out our ideal. We know there is something wrong. We know our rural boys and girls are not being fitted to efficiently serve society and humanity. But it is not enough to say what is wrong, we must find a remedy. There is no one to-day who is not interested in rural depopulation. We must get our own Canadians back on the land, we must retain those we have there, and we can never do it with our present system. We have had urban education thrust on rural people for two generations, and we are reaping the results in depleted, unmanned farms, and a discontented, unsettled farm people. Our education is urban, our teachers are trained as urban teachers, trained to teach a graded school, and most teachers make the rural schools a training school for an urban school. They experiment there and then leave, and we seldom have teachers trained as rural leaders with a rural viewpoint. Some way must be devised whereby teachers will secure training to teach rural ungraded schools, and trained as community leaders. It is a deplorable fact that only about five per cent. of our rural boys and girls go beyond the public school. Now, there was a time when an elementary education sufficed for farm life, but that is not so to-day. The pioneer period is past. To-day the farmer does everything by machinery except eat his meals, and rides on everything except the milk cow. The country has advanced to an industrial calling, modern agriculture is now a science, and world-wide co-operation and intelligence necessitates a more highly

trained intelligence to farm successfully. Co-operative schemes cannot establish themselves in a community starved educationally, for a country is not better than its schools. A good school, a progressive community; a poor school, a poor community.

I know that the rural schools of the past have turned out wonderful men and women in spite of their education. A community is no better than its schools. We must have secondary schools right out in the open country, schools which will teach academic education part of the time, and manual training, agriculture, and domestic science, where boys are trained as citizens, in civics, and public works of interest, an all Canadian school similar to the secondary schools of Denmark. At this school girls will be taught domestic science, nursing and mothercraft. Have you ever thought that the most important phase of woman's whole life, that of motherhood, is absolutely ignored in our school curriculum?

Consolidated schools will do much for rural education. It has its disadvantages, we will admit, but it also has advantages in better education, in better housing, more sanitary surroundings. Many of our rural schools are absolutely unsanitary, and a lack of beauty predominates.

School supervision of playing together is important in our life. Towns and cities have seen the necessity for hot lunches. These are more necessary in the country.

Let us then interest ourselves in education for our boys and girls in rural communities. Democracy is nothing more than the consensus of public opinion crystalized into action. The rural school system will only be changed when the rural people become interested sufficiently to demand the best and to be satisfied with nothing else.

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## HOW TO GET INTO CO-OPERATION WITH THE SCHOOLS.

Mrs. Freeman Campbell, Dalmeny.

Any organization such as a Women's Institute in a community ought to be an important factor in the development of civilization. No community will become a better place in which to live until its members realize they are the life of the community and not merely boarders in it. Better homes, better schools, better churches, better people—for these things every community must strive if it would thrive. And these can only be secured by unselfish service and earnest co-operation.

If a Women's Institute lives entirely to itself, it cannot become permanent in itself. That fact is just as true as the verse, "He who liveth to himself dieth." No progress is possible unless it is based on the relationship of the home, the school, the church and the farm. Nothing is wealth that is not of service in making better men and women, more efficient boys and girls.

I would say in the first place then that Women's Institutes can co-operate with the schools by acquiring a broader and accurate knowledge of the aims and purposes of schools and the importance of the schools in the community. "Too often the average rural teacher and the average rural trustee look upon the school as a little equipment on a little ground where a little teacher at a little salary for a little while teaches little children little things." Many a woman has found just such a "little" ideal in her community, and has had ideas as to what might be done and what ought to be done in the school, but wasn't brave enough to present her ideas alone. When, however, there is a Women's Institute in the community, with their motto: "For Home and Country," with their ideal of

developing better health, better homes and better schools, I take it that they can do much in making themselves heard as to their ideas. I believe there ought to be an historian appointed in every Institute. There should be a committee appointed that would stand possibly for three months and then change to another, that would arrange at each of our monthly meetings for a fifteen minute talk on matters of this kind, referring to the history of education, and the aims and purposes of schools. If this historian, aided by this committee, were to carry out the policy of clipping from magazines of good standing, authoritative in their position, matters bearing upon these subjects, and placed them in a scrap-book, your Institute would gradually build up a considerable amount of knowledge concerning schools, that would be of very great help. These committees, working together and from time to time being changed, carrying out the idea of having papers read and obtaining information from all available sources, would lead you to get down to basal principles; for I take it that if Women's Institutes are to do anything at all in this work of co-operating with the schools, they cannot set out with the idea that it can be accomplished in any superficial manner.

In the second place, the Institutes to co-operate with the schools should acquire a knowledge of the work that is being carried on in them at the present time, and the conditions under which that work is being done. How are you to do this? In the first place by going to the schools. In your Women's Institute you can have a committee appointed for this purpose, and I would even propose that it would be a good thing if every Women's Institute presented the school in their own community with a visitor's book, and see at the end of the year that as you turned page after page it was not blank. I believe any teacher who has the interest of the school at heart will welcome your presence if you come in a sympathetic way and give the opinions you have along the line of their work. We will find if we visit the school in that spirit, much that will cause us to consider at our regular meetings many things that influence the work of the schools. Visit schools in other centres and see in what way yours can be improved. Visit the schools in your convention city. One of the things you would note, I am sure, is the provision made in city schools for vocational education—manual training for the boys and domestic science for the girls. There has been a false standard in our public life. Our idea of education has been too largely that a man who was educated was a man who therefore could live without labour. You hear parents say, "I want my boy to have an easier time than I had." That is a very laudable desire, but labour with the hands has fallen into too prevalent a disrepute. Every child should be trained to do work with his hands and be proud of that work. A printing company not long ago issued a calendar and on it was this motto, "Genius is 2% inspiration and 98% perspiration." Put that motto before children, and teach them that we cannot hope to eat if we do not contribute anything towards production. No child was ever intended to sit in school and read and read and write and write about things other people have done, and not do anything with his hands. I am going to relate to you an experience a domestic science teacher had in one of her classes. Teachers endeavour to correlate all subjects in the curriculum as much as possible. This teacher had the custom every year of giving her class a problem in arithmetic to find out how much their fathers had spent for their maintenance. She was leading up to a discussion of the family budget. These girls would put down the cost of a simple baby outfit, their share of the rent, all these years; of the taxes, of church expenses, of the fuel bills, of the grocery bills, estimate the amount their clothing had cost, all kinds of expenses and add them up. One

girl came to her and said, "There, I've put it all down. I have been three weeks doing it. I have added it up and I think it's right, but I know it isn't true. I know my father never spent all that money on me." He had. She could not pay it back, and nobody wanted her to do so. She could never estimate the love and care her father and mother had given her. But as long as that girl was in the class, she, who before working this problem had never been very anxious to listen to parental advice, had more thought for her father and was more ready to listen to him. There is no solution to the problem we have of introducing these subjects into rural schools, unless consolidated schools are established, or the time might come when a duly qualified teacher could take a group of schools for the teaching of these subjects. I shall not discuss the conditions under which the work is being done.

Just one word about the school lunch. In some city schools five cents a week per pupil is given the teacher, and each child receives a glass of milk at recess. Last year the dairymen began spreading a propaganda in the cities, "Drink more milk," but do you know I never heard of them going into a rural school and talking about "Drink more milk." Many rural parents send children to school without a drink of milk in their lunch basket, and there are whole pailfuls of it at home. If we want people to acquire the habit of drinking milk, they must do so when they are young.

Then again, the Women's Institute can help the schools by actively co-operating with teachers and pupils, linking up home and school interests and stimulating all to a better knowledge of the communities' resources. Many pupils leave school with a greater general knowledge of the province in which they reside than of the community in which the live. Some children know as much, or even more, about the history of England or some other country as they know of the history and resources of their own community; and if that be the case, how is it possible for them to have a knowledge of the conditions of their community? How can the Women's Institute help this? By actively co-operating with teachers and pupils. In the spring we have Arbor Day in the schools. In how many of the rural schools of this province have the Women's Institute been represented and assisted the pupils and teachers in doing little things in the way of gardening, in the way of beautifying the school grounds or schoolhouse, and in carrying out any idea that would give children a local interest as well as enjoyment?

As Institutes, you can demand that the teacher's responsibilities and duties as such be recognized in a greater degree than they are, and that the profession of teaching be composed in a greater degree of mature men and women who have an earnest purpose and settled habits in life, who are worthy of taking a leading position in the activities of the district and of demanding and receiving a good living salary. It is no crime to be young. Youth is something that has been with us all, but there is a menace in the number of inexperienced teachers we have, and if organized bodies like the Women's Institute would proclaim the menace we would be able to get more settled men and women in the profession. In addition to giving better salaries, if country districts wish good teachers, they must see to it that decent, warm, comfortable boarding houses are provided. There hangs in an American gallery a painting entitled, "The Octopus," and under it is this inscription explaining it: "The many tentacled towns drawing unto themselves the strength and sap of the earth," and one of the tentacles which draws some of the strength and sap of the teaching profession to the cities is just this wish for a convenient boarding house.

Before very long, come the annual school board meetings in the rural districts. To co-operate with the schools efficiently, the members of the Wo-

men's Institutes should be present at these meetings, just as onlookers if that is all they can do. The law of the province of New Brunswick says that one of the members of any school board shall be a woman, and surely we can work to have such a law established in this province.

Help the children in their play. Country children are forgetting how to play. Have you noticed they do not have games? One of the things that belongs to childhood is play. We ought to teach them how to play in supervised games. You will learn and children will learn more about children at play than at study. The present Provincial Government last year appointed three directors to direct, introduce and supervise school sports. This was certainly a step in the right direction. In our own local Institute we presented our school with some sports' equipment and hope to add more to it from time to time. One other way we co-operated with our school was in regard to our school fair. We offered prizes, helped to sew costumes, etc. As a result of co-operation, our school, which had in each of two previous years won a cup donated by our local Agricultural Society, again captured it this year, and we are glad to say it now remains permanently in possession of the school.

Women's Institutes might also agitate for a music supervisor in the schools, one in each county at least and one perhaps just for two or more townships. He would visit the schools and supervise the giving of elementary instruction in singing. It may be impossible just at present to have manual training and domestic science introduced into many rural schools, but we could have some supervision in music and art. Place copies of good pictures on the walls of the school and do not have for the only decoration last year's calendar of the local grocer.

As Institutes we do not do very much in co-operating with the secondary schools, and I just wish to offer one suggestion. Kemptville Agricultural School belongs, essentially, to Eastern Ontario. It is the only school of its kind, and it aims to fill a long-felt want in the education of our boys and girls. One of the finest things the Eastern Ontario Women's Institute could do would be to offer a scholarship to be competed for by girls of Eastern Ontario, the winner to attend Kemptville Agricultural School. In the state of Illinois the Household Science Department of the Farmers' Institutes offers fourteen scholarships every year, the girls winning them entering domestic science classes in their State College. Surely in schools like these a girl will receive a training that will prepare her to enter a home of her own with some knowledge of the values of foods, of personal hygiene, care of the home, etc.

There are many things that one might say about co-operating with the schools. We live so near to the whole wide world now that we need to train ourselves in co-operation—first in small groups striving for better schools in our own communities. This accomplished, we will want the next group to know of the good that we have found, and we will say, "We are not content that our county shall have the best schools. We want the next county and the next and next to be just as good." Then we shall feel that we want our province to have the best possible schools; our thoughts will broaden to include all the provinces later, and then the wish that the whole nation had better schools will come. Little by little will come to us that grander thought, "I am not simply a Canadian; I am kin to the whole world." Then will we be just on the margin of that greater truth that God has made of one blood all the peoples of the earth and all are brothers.

## ONE SCHOOL'S HOT LUNCH SYSTEM.

Miss Annie Jamieson, R.R. No. 3, Renfrew, Ont.

The following is a brief account of the methods employed in carrying on hot school lunch in a rural school in Renfrew County. The hot lunch was tried out for seven months in 1920-21, so that last winter the pupils knew just what to do and when to do it. Each day the teacher and children decided on a hot dish for the next day. The children brought milk in turn. Their lunch was different every day, that is, they never had the same thing on two successive days.

Rice, scalloped potatoes, baked beans, pea soup, vegetable soups, tomato soup, custards were favourite dishes. Two girls and two boys were appointed each week, and each had his and her job. None of the dishes prepared required the girls to spend much time from their lessons. A little experience taught them just exactly the amount of heat required in the stove, which was a box stove. The girl cooks and the boy assistants wore aprons, the latter similar in style and material to a grocer's apron. At twelve noon, each pupil placed a square of oilcloth on his desk, then went and washed his hands, using individual towel. While the pupils were washing, the boy waiters had placed the required dishes on pupil's desks, and helped to serve. Pupils sat down and one of them said grace. They took turns in performing this rite, and the boys did not object, taking it as a matter of course. After all were through, one piled the dishes up, and brought them to the table; one washed, one dried and the fourth put away. The time required was twenty minutes, leaving plenty of time for play.

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## CO-OPERATIVE AND INDIVIDUAL LABOUR SAVING.

Mrs. Calvin Blair, Billings Bridge.

It has been said that housekeepers spend five-eighths of their time attending to the purely physical needs of their families. If this be true, or nearly true, it is surely fitting that we should spend a part of this first session of our convention in considering labour saving, co-operative, and the individual.

Co-operation is a very popular word at present. One hears it on every side, but usually in regard to men's work. Women have been much slower in taking it up, for while men club together and buy or hire a big machine to do their heavy work, women manage somehow to do their own.

Of late, a number of farm papers and magazines have been advocating community laundries and canning centres. It would surely be a great relief to be able to put our soiled clothes in a big hamper and send them off to a laundry which we were fairly sure would not use destructive chemicals, and have them come home in a day or two ready to put away or to wear. None of the fuss and muss of washday and no tired feet on ironing day.

The only community laundry which I have been able to get anything definite about is over in Chatfield, Minnesota, where a steam laundry is run in connection with a creamery. A stock company was formed, modern equipment installed, skilled help engaged and the latest available accounts tell of its successful operation. The farmers bring the hampers of soiled clothes on one trip to the creamery and bring back the clean clothes the following trip. A delivery man calls for and delivers the clothes in the town and ten per cent. extra is charged for this.

The canning centres, of which we have some in Ontario, are also equipped with up-to-date machinery, and the housewife brings her fruit or vegetables to the centre and assists in the work or does it herself as the case may be. Canning is done in both glass and tin, and is, of course, done much faster and with less labour than would be possible at home.

Bake and butcher shops, owned and operated by a community where we could order our day's supply, would often be a great help, but I am afraid that very few of us would wish to patronize it every day. A community icehouse would be of real value in a small town or village, but would be very little benefit to farmers who use ice in large quantities. A vacuum cleaner, either electric or hand power, may be successfully owned and used in a small community. All these forms of co-operative labour saving with any others you know of will be open for discussion in a short time.

Coming to the more familiar topic of "Individual Labour Saving": Shall we begin with labour saving machinery? If one is fortunate enough to have the use of electricity, much labour may be saved. It would be no small matter to go over the list of labour saving devices which the agents for electrical goods have on sale, but we will only speak of a few which have the quality of saving heavy labour on the washer and wringer, iron, vacuum cleaner, and pressure tank to drive the water from the cistern to the top floor. These are all open to the woman who has electricity and the money to pay for them. The pity is that there are so many homes in the country without electricity. But we are still hoping for it, and I am beginning to believe that the man who said that hope was the "great anesthetic" knew what he was talking about. It certainly seems to keep us soothed and quiet while we wait for better and easier times.

If we have no electricity, a gasoline engine seems to be the next best thing. One farmstead that I know has a small building over the well. It has a cement floor and good drainage. Here they have a gas engine which pumps water, runs the cream separator, churn, grindstone and washing machine. It is a real labour saver. The type of washer which is usually called an electric washer can be just as successfully run with a gas engine. Then there is the water motor washer which is quite successful when you have sufficient pressure. There are many types of the old reliable hand power washers, and we all have our favourites, but those with a balance wheel which takes the load once it is started, and which allows one to stand erect while working, would seem to be best.

A clothes chute and a basement laundry are listed by some as labour savers, and I believe they are. The clothes chute saves many steps, and may be arranged in most houses. Sometimes they are put on the outside, at the back, sometimes the opening is put in the floor of an upper balcony.

For the basement laundry it too saves labour in that it takes the work out of the kitchen; but most doctors will tell you that a basement is not a good place in which to do deep breathing, and that is what we all do when we wash. In summer I think one should take their washing and all other work possible out of doors, in the shade. You will have all nature to entertain you while you work, and will not tire so easily.

I suppose we never talk or think of labour saving without the question of running water coming to the fore. And we have all heard a good many times of the hard-hearted, tight-fisted farmers, who provide running water for their stock but refuse to provide it for their wives and families. There may be cases where a man refuses to provide it for his wife and family, but in any of the cases of which I have known, the difficulty has been that a sufficient quantity of soft water has not been available and the farmer's wife has objected to the cost of

installing running water which is worthless for either laundry or bath. So with a pump for soft water on one end of her sink another on the other end for hard water, she is waiting for an electric pressure tank to deliver soft water for her. Just here I would like to say that I have lived in both country and city and I am convinced that in point of kindness to his wife and family the farmer stands second to none.

We all have our own ideas of the size of kitchen in which we like to work. Some women say, "I like a nice, big kitchen," another says, "I like a small one, so small that a man cannot get into it." A small kitchen, which is used exclusively for a work room, has an advantage in that the utensils do not need to be kept behind closed doors. Many of you have heard Mrs. Stephens say that a carpenter who puts his hammer and saw away in a closet and shuts the door every time he used them would find it hard to get work. So with the cook; if she can have the things she is constantly using within arm's reach much time and many steps will be saved. Where a kitchen cabinet is not used, narrow shelves over the work-table does instead, and saves floor space. A shelf set out from the wall about an inch makes a place to set both sauce pans and covers and should be quite close to the stove.

If a kitchen is to be used for a family dining-room it has no need to be a large room if one is to have space for all the equipment which is available to-day. Perhaps the easiest way I can speak of this equipment is to tell you of an all-the-year-round farm house kitchen which I know. There is electric light, hot and cold soft water, electric washer and wringer (a private plant supplies the electricity), a modern range with oven, kitchen cabinet, four-burner oil stove' aluminum utensils, refrigerator and a built-in cupboard, besides the large table which is used for the family meals, except in hot weather, when, instead of moving the kitchen things, they go into the dining-room for meals. I fancy if the woman who owns that kitchen was asked what labour saving device she wanted next she would say, "A fireless cooker."

Fireless cookers, homemade or otherwise, are wonderful time and labour savers, especially if an oil stove is used. I am sure you all know of the different kinds, but quite the best one I have ever seen was shown at the fall fairs, an "electric fireless cooker" (electricity again). One had only to put in the meal, push in a plug, shut it up and leave it there. When the heat reached a certain temperature the electricity was turned off automatically, and the accompanying advertisement showed a cut of the housewife starting off to the golf links with dinner safe in the fireless cooker.

Now for a few of the little labour savers. Little things count very fast in housework. Have you read Mrs. Fredrick's articles on saving motions? As for instance, in washing dishes, if you have your drain board or dripping pan on your right side instead of your left you lose motions because each dish must be passed from the left hand to the right before it can be laid down. "A pretty small matter you say." But when we wash dishes three times a day at an average of twenty-one pieces a day for each person, with a family of five persons, it only amounts to about 47,320 pieces in a year. How many minutes would it take to pass that number of dishes from the left hand to the right? And as it is with dish washing, so with other things, and we tire ourselves needlessly.

I wonder how many of us save labour in the summer time by using the sunkist method for laundry work. What is it? Just put part of the clothes away without ironing, "Sunkist." We are told that "washing is a necessity, ironing a luxury," but most of us go in for considerable luxury if that is the case. A revolving stool that can be used at different heights helps out on ironing

day. Then, where there are children in the house, iron the handkerchiefs first, then as you iron a blouse or middy slip a hanky in the pocket. For a small family, large table cloths may be dispensed with, and a large centre piece or square of hemstitched linen used instead.

A length of hose can be used in many ways (if you have water on tap). On wash day it will save lifting part of that ton of water, besides being most convenient for washing out the tubs, for rinsing milk and milking machine pails, for watering the small kitchen garden and for washing the car.

Have you ever tried to do a little studying to break the monotony of a mechanical task such as mending, knitting, ironing, etc.? Just drop (or pin) up your book, paper or poem, within easy seeing distance and you will be surprised how much of it you will have made your own in a short time.

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## CO-OPERATIVE AND INDIVIDUAL LABOUR SAVING.

Mrs. C. W. Farran, Farran's Point.

Have we not heard from many sources that when people work together much more is accomplished, and the task is considerably lessened for each one. Then why not join the housekeeping forces and save labour for the worker in the home? There are many conveniences to-day to enlighten work in homes, especially where the services of electricity are available. Throughout the country many hydro lines are being built which is a great boon to rural people.

A number of ladies could form a club or company, paying equal shares, and buy a vacuum cleaner, to be used by each of them in turn; arrangements also could be made to rent the machine, which would help pay for it. In the same way an electric floor waxer and polisher could be bought. Anyone who has ever waxed and polished a floor by hand would appreciate one run by electricity. A community kitchen ought to prove a success. A room could be equipped with an electric washer (provided electricity was available, otherwise a good hand run machine would do), also an electric ironer, or mangle. A steam canning outfit in the kitchen would simplify matters wonderfully during the trying canning season, as many cans of fruit and vegetables could be managed with much less trouble.

A community sewing room might be instituted. Many women, especially the younger ones, are unable to make even an ordinary house dress. Under the supervision of one or two ladies, who understand sewing, the simpler garments could be made, and dollars would eventually be saved, for a ready-to-wear will not last like a handmade article.

Perhaps many mothers are unable to enter into the community system, so it seems that the idea of saving labour for the individual is perhaps more important. In the first place, if anyone is fortunate enough to be building a new house, let the one idea be to save steps in the home. In these days when procuring help is such a problem, the mother's tasks are often doubled. Then why not try to make life easier for that mother? I heard a man say, "When building a home, plan your kitchen first, then add the rest of the house." We are all so prone to spend large sums of money on the front part of the house, while the kitchen is an afterthought, tacked on. Have the floors all on the level, even one step which must be traversed many times a day is more tiring than a person would suppose. Then, if those floors were all hardwood, there would be no need of dusty carpets to sweep all year and once a year at least to take up and beat, then to tack down again. If you are thinking of buying a carpet, first estimate

the cost of having a hardwood floor laid, then find out what a carpet would cost, and the chances are the carpet would stay in the store.

Have cupboards built in wherever possible, especially between the kitchen and dining-room, having doors opening on either side, and near this cupboard a dumbwaiter from the cellar would save many steps.

Another good friend is a dinner wagon. An expensive one is quite all right, but there is always the fear of scratching or blistering the varnish. A cheaper one may not look so elegant, but it will save just as many steps and will carry many a load which perhaps tired arms and back would have to carry.

A fireless cooker would save fuel, time, and patience. Is it not trying in hot weather to stand over a hot stove, cooking meals, when with a fireless but a few minutes are required to heat plate and soapstone, and start eatables cooking? The housekeeper would be able to do many other things and forget the cooking until meal time.

A mop wringer in every home would probably mean fewer red hands and sore, swollen knuckles. No woman cares to have coarse, rough hands, but this is almost impossible to avoid when they must constantly be put into hot, soapy water.

Just a wee hint to those fortunate enough to have children in their homes. Mothers, see that your children help you. Assign certain work to every child, and see that that work is completed. Within reason, they need responsibility. Don't wait on your boys and girls, let them wait on you. They might be termed your "Natural Resources." God loaned them to you, and if you do not do your very best to teach them and fit them to take their places in the world, would that not be unfaithful steward ship?

Is someone saying, "But the articles mentioned cost so much money?" Of course they do, but are you not worth it? It is no economy to do with as little as possible, in order to save and have a good bank account. Some day there may be a doctor bill amounting to more than the combined cost of all the articles mentioned which would perhaps have saved the overstrained muscles and nerves from a breakdown.

Do not horde your dollars for someone to spend unwisely when you have passed to the Great Beyond.

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## A SIMPLE WATER SYSTEM FOR A FARM HOME.

I. F. Metcalfe, Agricultural Representative,
Rainy River District.

Mr. I. F. Metcalfe paid a strong tribute to the work of the Women's Institutes, and expressed regret that the farmers had not similar organizations for local and district meetings and conventions.

He gave an address of great interest and value to the residents of the Northwestern Section of the Province on all the year round dairying. Since the facts presented, and the recommendations made are not applicable to the whole province, we present herewith only that portion of his address: "Conveniences for the Farm Home."

There is another matter that I would like to touch on and that is water for the home. As I travel over the country I frequently see very rude makeshifts for handling water, where a small, judicious expenditure and some labour applied would change all that. We are not ready yet for expensive pumping outfits with plumbing for bathrooms, etc., for that would cost more than most farmers

here can afford. At the same time, we can often have nearly the same conveniences very cheaply. For instance, there should be a fair sized cellar with a cistern in it, and above that in the kitchen there should be a sink with a cistern pump at one end and the well pump at the other end. Then, by putting a small pipe through from the cistern, you can have cold running water into a bathtub, that would probably cost you about twelve dollars. This can be drained into the cellar drain. By setting up a small stove with a boiler, beside the tub, you can have hot water for the bath. This stove could also serve as a laundry stove and you can have a combined laundry room and bathroom beside the cistern in your cellar. Now a cheap chemical closet will complete the installation, and you will have all the comforts of running water at a fraction of the expense usually considered necessary. I have simply described my own outfit in my house at Emo, and I believe that it is quite possible for the average farmhouse.

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## POWER CONVENIENCES FOR THE FARM HOME.

MARY GRANT,
PRESIDENT OF THE ONTARIO MUNICIPAL ASSOCIATION, LONDON.

Miss Grant, in speaking of power conveniences for the farm home, emphasized the advantages of electricity in lightening the burden and increasing efficiency in washing, cooking, ironing, sweeping, pumping, separating, sewing—all of which work can be so greatly simplified by the use of electric appliances.

Much of the information imparted by Miss Grant was applicable only to the district surrounding London. Those interested in or desirous of getting information bearing upon the utilization of Hydro in the rural districts, should ask the Municipal Council to request the Hydro-Electric Power Commission, Toronto, to quote the cost of hydro delivered to the zone in which the applicant resides. Following this Miss Grant said:

"When the estimate has been received a public meeting should be called, and it is very important that this meeting be largely advertised—the women can help here. It is almost necessary that the municipal council be in sympathy with the Hydro, the very greatest municipal undertaking of the age; but should you find one that is not, I think the ladies can persuade the members not to stand in the way of those who would like to secure Hydro for their farms. To this first meeting, the Hydro-Electric Power Commission will, if requested, send engineers to explain the cost and procedure, and they will send a supply of contract forms. The women should attend this meeting, bringing their husbands and fathers and brothers. Providing a number of the residents, now having a thorough understanding of the cost which is the only real objection one can have to the use of electricity, express themselves as ready to sign contracts, committees may be named to canvass the zone. Choose representative men and women, preferably those who have signed contracts themselves, and divide the territory among them. Set a date, not too far ahead, still far enough to permit of the district being thoroughly canvassed, for the canvassers to meet, bringing in the contracts."

We are presenting herewith only sufficient of Miss Grant's address to enable those interested to make a start in securing Hydro-Electric power. Further steps will be explained by the Hydro-Electric Power Commission when the time arrives for further action.

In closing, Miss Grant said: "If the women of this part of Ontario want Hydro-Electric power in their homes it lies in their own hands to have it."

## SAVE MY BABY.

Dr. Helen MacMurchy, Chief of Child Welfare
Division of Department of Health, Ottawa.

In one of the oldest churches of this province and city there is a Minute Book of the Ladies' Association, kept by the Recording Secretary, which tells, more loudly than words, what a good secretary she was. More than half a century ago, according to the approved fashion of those days (and not unknown at the present day), the ladies of the church organized a bazaar. There was a certain comfortable and valuable arm-chair, which was the leading feature of the bazaar. Tickets were sold for it, and the revenue of the bazaar was greatly increased thereby. But none of the ticket holders got it. The final disposition of the arm-chair was settled by some lady who had that real Canadian touch of homely, kindly feeling, which, in city and country, is the greatest charm and joy of Canadian life and character.

It was proposed that the arm-chair should be sent to the new Governor-General. He had just arrived in Canada—one of the very earliest of that distinguished line of servants of the Empire, who, as directly representing the Sovereign, have done so much for our beloved country. And the Governor-General fully understood and fully returned the feeling that prompted the gift. He sat down and wrote to that secretary, with his own hand, and with no assistance whatever from clerk or secretary or A.D.C., a homely, kindly and eloquent letter of thanks, telling how touched he had been with their kindness in thinking of him and with the thoughtfulness of their gift.

That letter, yellow with age, but well written and easy to read, is spread upon the pages of the Secretary's Minutes and constitutes the chief treasure of the book.

And what has this to do with the subject before us?

That Governor-General was Lord Dufferin, afterwards Marquis of Dufferin and Ava, who represented his Sovereign with such brilliant success and distinction, not only in Canada but at Damascus, at Paris, at Constantinople, at St. Petersburgh, and as Viceroy of India—in fact in every quarter of the globe.

"Save my Baby." He, the future Lord Dufferin, was the "Baby." The one who said these words was his mother, and the time was just before his birth.

These words are the universal cry of the human heart. It was because Lord Dufferin's mother was a true woman and mother, that her words strike an answering chord in every heart. Her ideals were our ideals, the ideals of home and country. Her simplicity, affection—devotion—these are what we are in our inmost hearts and what we would be at our best. We may not be able to express them; our part in cherishing and upbuilding these ideals may be obscure and small, but they are there. And if we would understand ourselves and our fellow citizens, we must think of our fellow citizens and of ourselves at our best. It is the settled purpose and hope of this country—as it is the settled purpose and hope of every Canadian home to "Save the Baby."

Who was this then, who said, on June 21st, 1826, the day of Lord Dufferin's birth, "Save my Baby?" What were her ideals and what were her people and her family traditions like?

Lord Dufferin wrote a brief biography of his mother, which enables us to answer these questions, in his own words.

He speaks of her "good sense, tact and womanly discretion," but above all, of her "intensity of affection." "The chief and dominant characteristic of her

nature was her power of loving." He speaks of the "force" and strength of her love being in her house "like the light of the sun—indestructible." Of such wonderful energy—that she lavished it upon her own mother, and that everything and everybody had a share of it—"her horse, her dogs, and her birds."

"Her wit," says Lord Dufferin, "or rather her humour, her gaiety, her good taste, she may have owed to her Sheridan forefathers, but her firm character and her abiding sense of duty she derived from her mother, and her charm, grace, amiability and loveliness from her angelic ancestor, Miss Linley."

The reference is to Lady Dufferin's grandfather, Richard Brinsley Sheridan, the famous orator and author, and to his wife, Miss Linley, a musician (and the daughter of a music master), whose grace and beauty are a tradition of English art and history. In the painted window representing the three Christian Graces, Faith, Hope and Love, in New College, Oxford, she is the original of the fairest of the three, Love. Her portrait was painted by Romney, by Gainsborough and by Sir Joshua Reynolds, who represented her as St. Cecilia, and hence the allustion to her in these words of Lord Macaulay's essay on the "Trial of Warren Hastings." "There, too, was she the beautiful mother of a beautiful race, whose delicate features, lighted up by love and music, art has rescued from the common decay."

These ancestors of Lord Dufferin's were, of course, all English, and the Dufferins were, of course, all Irish, but it may be a consolation to those of us who are proudly conscious of a Scottish ancestry to remember that Lord Dufferin's family, whose name is Blackwood, came straight from Fifeshire to settle in the north of Ireland.

But Lord Dufferin has other recollections of his mother. His father was a British naval officer, who, to the grief of his wife and son, had to be much away at sea. They lived in a little country cottage in the south of England, and he says that there the "first recollection of my mother fixed itself for all time in my memory, as her loving, radiant face, which was my childhood's heaven, as indeed it never ceased to be, bent over my cradle."

In this little country cottage, when he was three years old, he remembers, too, helping to celebrate his mother's coming of age, for she was only nineteen years old when he was born.

Lord Dufferin's father died when the boy was fifteen years old. He was then at school, but he lived at home with his mother from the time he was seventeen until he was twenty-one.

"It must have been no little sacrifice to her," he says, "to pass so many years of her life in the solitude of a country house, but the gain to me was incalculable."

Lord Dufferin was married in 1862. He says that he never saw his mother's love more triumphant than when she took her new daughter to her heart. "She could not have welcomed my wife with more tenderness," said Lord Dufferin, "if she had been her own daughter, nor taken a deeper interest in all that concerned her. Nor can words express the passionate delight and joy she took in her grandchildren, of whom she lived to see three born."

It was his mother who made Lord Dufferin. We know what he did for Canada, and he was able to do it because he understood Canada and because he loved her.

Returning once from a pleasant visit to Chicago and Detroit, he said how glad he was to get back to "My own Canada."

When there was a first-class row and threatened riot in a certain province about a certain thing, Lord Dufferin stood firm for law and order, though he said it gave him "pain to differ from any of my Canadians."

There are people living in Ottawa to-day who remember the last sight of Lord Dufferin as he drove from Rideau Hall to the railway station on the day when he left the Canadian capital forever, and the tears were running down his face.

He had his share, and not a small one, in influencing the history of the world, and of the Empire, but to his mother belongs the glory, for she made him what he was and able to do what he did.

"Save my Baby." These words were repeated to Lord Dufferin by one who actually heard them spoken. At the time of his birth, Lord Dufferin's father and mother were, it might almost be said, in exile. They were married on July 4th, 1825; and, knowing that his wife would then receive no kind reception from his family (though afterwards they were most devoted to her), and feeling that their love and his naval officer's pay were enough, Captain Blackwood left London that same day with his bride. When her baby was born, in Florence, Italy, on June 21st, 1826, she would have died but for the devoted care of two women, her friends, and of her two physicians. At a crisis, the physicians withdrew to the next room for a private consultation. The room partitions are not so substantial in Italy as they are in Canada, and the patient overheard her doctors, who feared that they could not save the baby except at the expense of the mother's life, debating what they should do, and she cried out—"Never mind me; save my baby."

They saved the baby, and the mother too. What would have been the use of saving the Baby if they had not saved the mother? Even if he had survived, which is not too certain, he never would have been Governor-General of Canada and the great man that he was, if it had not been for his mother.

"Save my Baby." The voice is the voice of Canada.

In 1921 there were in Canada about 255,307 births. Of these babies, 29,027 died before they were one year old. Our infant mortality rate is about 113 out of every 1,000 births. This is far, far too great a loss to Canada. We must save our babies.

Lord Dufferin speaks of his mother's "good sense," "tact," "womanly discretion," "affection," "firm character," "abiding sense of duty," and we thankfully recognize that these words, in which our great Governor-General portrayed the character of his great mother, express our own ideals.

I ask you this day to follow these ideals and to support and help and carry on to a successful issue all the plans that will be laid before you by your local health authorities and Provincial and Dominion health authorities to save the babies of Canada.

## RAISING THE STANDARD OF HEALTH IN SCHOOL AND COMMUNITY.

Mrs. G. R. Bradley, Ottawa.

If you look in your Institute Handbook under the heading "Aims and Objects," you will find that one of the original objects of the Women's Institute is "the more scientific care and training of children with a view to raising the general standard of the health and morals of our people." I came across an old Handbook of 1907 when our organization was just ten years old, and I found the same clause under the same heading so we have been working along this line for at least fifteen years, and I shall endeavour to review some of the work which has been accomplished.

According to statistics it has been found that the average life of an individual has during the last fifty years been increased eleven years, and that the greater part of this has been accomplished during the last fifteen years. The pioneer Institute members laid the foundation and their works are following them. Their aims had been the great principles of sanitation and ventilation in our homes, the most healthful and rational way of feeding our families to make and keep them strong and healthy in body and mind. If we wish to have clearness of vision, the ability to grasp and understand the perplexing questions of the day, and a wise judgment in these things, we must be mentally as well as physically strong. Our pioneers studied these great principles and we, having been taught them, accepted them as something quite ordinary. We are now beginning to see the results.

When this had been done in the homes the women's attention was quite naturally drawn to the schoolroom. One has only to take a passing glance at surroundings to note the improvement in the general appearance. The condition of the schoolyard is much better. The dark, dingy, light-absorbing walls of the old schoolroom have assumed a brighter hue, being made attractive by the display of maps, pictures, drawings and sketches, and other works of the pupils. The light from the windows is better regulated by properly drawn shades. In many cases, especially where there is a "school committee of the Women's Institute" at work, the windows, by the addition of simple muslin curtains and a plant or two, give a more homelike effect to the whole room.

The open water-pail and common drinking cups are now a thing of the past, or should be. In some cases wash-basins and sanitary towels have been installed. These are just a few of the many improvements which have been made in the average schoolroom.

Then there has been medical and dental school inspection. It was Miss Maud Hotson and Mrs. Dr. Wilson who pioneered this movement. The Women's Institute at Parkhill, followed by others in other parts of the province, carried on this work until the Government was fully convinced of its importance, and gave it most generous assistance. To-day the general survey has almost been completed, and now the question which many of us are considering is "Shall we or shall we not have a school nurse?" Unless the "follow up" work is undertaken the survey is practically of no use. The school nurse links up the school and the home. The aim of medical inspection in the school is to give each child a healthful body and sound mind, the ideal being the normal child. It makes very little difference how bright a child may be if he lacks the physical strength to stand the strain of later life. It is also the aim of medical and dental inspection to teach, through the school nurse, the elements of personal and public hygiene, to teach the relation of physical defects, such as diseased tonsils and teeth, imperfect hearing and defective vision, to the general health and also to show how to correct these conditions. While we know that most parents will attend to these conditions as soon as they know of any defects and have them corrected, the school nurse, while teaching "health laws," will see that the mothers understand and carry out these principles.

To-day our school teachers receive a thorough training in physical culture through which, by means of drills and other exercises, they may teach the children the exercises necessary for the proper development of the different muscles of the body. It is the unused muscles that become a prey to disease.

The school hot lunch is another important step in the right direction. Where this has been carried on, children must surely be in a better condition for the afternoon's work.

Through the Child Welfare Bureaus and by the forming of clinics the mothers are also taught the proper way to feed and care for their children.

How may we, the homemakers, co-operate, that the greatest benefit may be derived? The standing committee of our federation advises each branch to devote at least one meeting, two would be better, each year to the study of health subjects, such as conservation of health, to promote a more general understanding of the principles of nutrition, how to prevent and control the spread of contagious diseases, and to promote the circulation of health literature.

The Department is furnishing valuable information along these lines through the demonstration lecture courses. In the domestic science course we learn the nutriment value of the different kinds of food, and how best to prepare them, so as to derive the greatest benefit. Improper feeding has much to do with the health of the body. Nature to sustain life makes certain demands upon the system, and these must be supplied in nourishing food. Proper food makes healthy bodies and healthy bodies develop sound minds, and sound minds develop sane thinking.

The home nursing course cannot be fully appreciated until sickness or accident enters the home. The woman who has had this training should be capable of ministering in many ways to the comfort of her patient and to understand the patient's condition whether it is serious or not.

Another important feature in the proper development of a healthy child is recreation. That other people are understanding the necessity of this may be seen in the increased number of playgrounds where the children are being taught organized play. Many of our schools are being supplied with outfits for games, baseball, basketball, tennis, etc., and are taught to play the game fairly and honestly which in after life means "honest dealing in business" while team play in business life becomes co-operation. Could not our school grounds be made more use of in this way—could they not be used as community playgrounds for the young people, and thus help on the community spirit?

To teach and educate our children how to keep well and strong by complying with nature's terms, which are very simple—fresh air and sunshine, plain wholesome food,—is indeed a very essential part of the work of the Women's Institute.

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## THE INSTITUTE IN HEALTH EDUCATION.

Miss Annie Jamieson, Renfrew.

First, the Institutes can do much in their regular meetings through their papers, discussions and demonstrations on foods and their values. We must remember that very few of us are domestic science graduates. We must remember, also, that the large majority did not have the opportunity of attending other than a public school; so it is hoped that as members of the Women's Institute this information will be brought to them, in the simplest but most practical way possible.

The "Science of Eating," the "Family Rations," "Proper Housing," "Sanitation and Ventilation" are all subjects which concern the home and those within the home. It seems that this is the woman's responsibility. It is also her opportunity.

Then we will find that with a higher standard of health in the home we will demand a higher standard for the school. You will find again that the subject of health in the school is one in which the women are more interested than the men. That is one reason we want women trustees. I do not want to disparage

the work of the men trustees; they look after the material side finely. There has been so much said in previous conventions about school medical inspection that there is no need of adding anything further, except to urge the districts to take the matter up, and try the school nurse. There will be not only an improvement in the health of the children, but the whole physical and moral standard of the community will be raised.

I have tried in a humble way to show you how the Women's Institute can lead the way to have better homes, better children, and a better community.

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## A PUBLIC HEALTH NURSING SURVEY.

Miss Carr-Harris, Provincial Board of Health.

(*Extracts from address given at convention held at Fort Francis, with delegates in attendance from Thunder Bay, Rainy River and Kenora.*)

It is hardly necessary at this convention to stress the importance of general public health work; that the modern scientific knowledge of disease prevention and health promotion should be available to every home, is the judgment of a great many of our best thinkers, and the objective of most health authorities to-day. The chief problem is in the method of attaining this ideal.

Experience has shown that one of the most effective agents in accomplishing this has been the general public health nurse; and it was with the idea of getting these agents established throughout Ontario that the Provincial Board of Health sent organizing nurses into each of the eight medical districts of the province, and adopted the policy which had proved most effective in establishing such nurses in other places, namely, to have general public health work demonstrated for several months in organized municipalities with a view to the municipalities eventually engaging and maintaining public health nurses of their own to carry on the work, which work would be partially or wholly financed by the municipality.

It was not long, however, when it became apparent in District No. 7, that the municipalities seemed unlikely to be able to do this, and it was also apparent that with a population outside the Twin Cities of 47,534, the greatest need for public health work was among those people in the outlying rural areas and those strung along the 1,625 miles of railways, where medical service was often unprocurable or very difficult to get.

The Department therefore decided to try the experiment this summer of providing three extra public health nurses for the district, with motor transport, for a period of three months, with a view to visiting as many families as possible in the remoter places, to ascertain their health needs individually and to give any advice or instruction along health lines which seemed to be necessary.

It was hoped that, apart from the good we might do for the individual—for some would profit by advice given, though some might not—our visit would be useful in making us links between the health authorities of the province and the individual home; and by coming in contact with local, individual and general conditions we might be the means of bringing into action any machinery which already exists for dealing with such conditions, but which from lack of knowledge had not been made use of.

Everywhere in the district our reception was most gratifying, especially so in the remote rural places. We found most mothers not only willing but anxious to talk over health problems, and to have their children examined; and many

promised to take the child to their family physician when defects were suspected by the nurse.

We were sorry to encounter many who would have been glad to do so had finances permitted; and one hopes that the future holds some solution for the problem of remedial work for those unable to afford it, and where delay will mean an impaired adult.

We did find conditions, both individual and general, which, if corrected, would mean a benefit to the district; and with time and patience and sympathetic criticism we may be the means of affecting some improvement in these conditions.

Let us consider the future.

In the past, deputations and resolutions have from time to time requested the Government to do something to improve medical service in this north country. I do not know of any who have brought forward a plan as to how it should be carried out in a practical way so as to include all and not lead to unreasonable expense.

If we omit the Twin Cities, Kenora, Fort Francis and the Reserves, we have a population of 30,000 people in this district alone, so that anything the Government decides to do in the way of medical service at their own expense must necessarily take that whole population into consideration.

In the United States they calculate that there ought to be a public health nurse to every 2,000 of the population. That would mean in this district a staff of fifteen nurses, which at the present time would be an unreasonable request. If we took as a minimum service a yearly visit to each settler, that alone would mean probably five or six nurses and transport.

We should not forget that it is difficult for a government to satisfy both the people who want them to spend more, and the people who want them to spend less money; and we must not lose sight of the fact that the Department of Health is not a remedial body. Their function is not curing sick people, but preventing diseases and promoting health.

It has been proved that the more money spent on disease prevention, the less sickness and death there is, which is an advantage to the country; but there are many people who do not yet realize this, and governments can only spend as much as public opinion supports them in spending. Therefore your approval of what they are doing and willingness to support their efforts backs them up in being able to do more. But in making requests let us be as concrete and reasonable as we can, carefully considering the problem as a whole and just what it would mean if our requests were granted.

Nothing is ever accomplished without a beginning, and in beginning one must have a plan, which must be added to and improved as experience dictates. We must even make mistakes if we would improve; and you who know the district are the ones who should give every assistance in your power to further our efforts along the best lines, by giving serious thought to the problems and their solution and letting us have your suggestions as to how they may be carried out.

At the present time I am unable to say what the Department will decide to do for the future, but I was recently authorized by my director to say, that the Department hoped to send next summer four nurses, with transport, for a period of six months; so that, looking back over the last two years, I think we can feel that some progress has been made.

To sum up: let us all try to think and plan for the district as a whole. Make concrete and definite suggestions for consideration, and try as far as possible to make constructive and not destructive criticism of the efforts being made.

## MEDICAL SCHOOL INSPECTION AND THE SCHOOL NURSE.

Dr. Phair, Department of Education,

Parliament Buildings, Toronto.

An outline of the activities of the School Health Division of the Department of Education is as follows: To make a systematic survey of health conditions in the schools of the province for the purpose of discovering to what extent health and physical conditions can be improved, by modifications in the accommodations, equipment, diet, periods of relaxation and work, physical training, school plays and games, school management, and section organization. This programme cannot be carried into effect successfully unless through the systematic survey referred to above, and for which the organization is now fully complete.

It has already been demonstrated that a proper system of school health supervision would increase citizens by about 30% at least. The main factor in bringing about this change must be by the establishment of a reasonably efficient system of full time school nursing service, which will be equally as applicable to both urban and rural districts and in all parts of the province.

Any system of school nursing which ministers mainly to the urban municipalities and leaves out the equally if not more pressing claims of the rural districts, would defeat the object we have in view. The plan of the Department is to survey each county and urge the appointment of a school nurse to each unit of from 35 to 40 classrooms, who will devote her entire time to the service of the schools and of the community so far as related to the school needs. The nurse will usually be located in a small urban area to which will be attached a sufficient number of rural schools to complete the required unit.

The appointment of well-qualified school nurses and efficient school medical officers in all self-contained units, such as the larger towns and cities, is also urged, and the assistance of the Department is always extended to help in organization or efficient administration.

The Women's Institutes lend valuable assistance by co-operating in the promotion of school health activities, providing funds for school equipment and transportation of school nurse.

Write to School Medical Inspection Branch, Department of Education, Parliament Buildings, Toronto, for further particulars.

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## OUR GIRLS.

"Standing with reluctant feet where the brook and river meet."

Emily J. Guest, Department of Agriculture, Toronto.

This has been an inspiring year in the Ontario Women's Institutes. It is a time to look back, and around, and forward.

That dream of twenty-five years ago, Utopian as it seemed then in its all but impossible reach after the ideal, we see to a great extent if not realized, at least realizing.

The State Department of Homemaking, a cloudy castle in the air at that time, has not only had firm foundations put under it but is rapidly becoming a fully equipped structure, serving the remotest farm home in the province through what our Superintendent so aptly calls the Department of Home and Community Building.

The College of Domestic Science to train teachers to teach us the science and art of caring for a human family has materialized in the much appreciated Macdonald Institute of the O.A.C., Guelph.

The rural homemakers have organized themselves into study groups in a thousand different centres throughout Ontario, following the example of the three pioneer branches which, still going strong, have this year been celebrating their silver anniversary.

At the service of the thousand Institutes is a travelling staff of steadily increasing efficiency, carrying the college to the people, as well as having a college to which the people may go, directed from the Institutes Branch of the Department of Agriculture.

Through all this service runs the joint work and service of the man and the woman, thinking together for the welfare of the home, a national reflex of the individual human home appearing in college and state department.

One of the most gratifying features in this year's work has been the increasingly important place our girls are taking in the Institute world. Not only in the Junior Institutes, which are growing in numbers, but in the increasing girl

Girls' domestic science class at Rockwood.

membership in the Senior Institutes, where the girls very frequently take entire charge of one or two meetings during the year and take some part in every one.

We, in the full power and joy of maturity to-day, look back with reverence to the modest beginnings in that silver-dawning past when men and women sowed in faith and hope the seed which we are reaping in the magnificent present, sowing also ourselves seed which our girls will reap in the golden future and in their turn plant even more grandly. One of the fruitful bits of reaping this year is in the group of girls, trained and experienced graduates of that college for which the Women's Institutes pleaded, who go out to teach our girls, as members of the Institutes Extension staff.

The Institute girl of to-day is one of the finest products of any period of our history. She looks upon life as a grand and great adventure for which she is preparing in a four-square way. She regards the super-business of actual living as worth at least as much thought and study as the business of making a living. To be able to make a living is one of the essentials, but *to live*, wisely, vigorously, a balanced give-and-take life of pleasure and service is even more important.

So our girls are training themselves in co-operation with the department, through their monthly meetings in programmes planned and for the most part executed by themselves, through the short courses, to be efficient women—to

work but not to drudge, to play but not to dissipate, to be social but not frivolous, and to crown all by a spiritual vision from the hilltop which yet does not overlook the humblest valley of service.

The women in the Institutes are proud of the girls, and justly so. They can make a dress, a speech, or a batch of bread. They can preside at a monthly meeting or frolic with girlish abandon, run a car or take a three-horse team and help in a pinch with the spring seeding or the harvest. They help the schools and the school fairs. Their practical sympathy has gone out to the soldier settlers, new-comers to the community, and abundantly to the fire sufferers of Northern Ontario. Needy or suffering children in their own neighbourhood stir them to find the right means of help for each case.

They are training for the full citizenship which will be theirs at twenty-one, by all this and by co-operation with each other, with the seniors, with the junior farmers, and with the government through its state departments and the services offered there. They are studying civics, the laws of Ontario, poetry, and the little Blue Books and kindred bulletins on life.

In this study of life our girls are learning to know the human body almost as well as women of another day knew the sewing machine, or her fathers the growing of thoroughbred horses or grain. She is awakening to the divinity of her own body, its laws, its needs, its purposes. The life of the race, stored by the Great Creator under her heart, is a trust. Love is not a thing to be taken lightly, as a joke, sometimes a vulgar one, as in an older day, but deep, earnest, sacred, a grave responsibility whose results extend far beyond herself. Co-operation will go into the home she helps to set up, and understanding co-operation between the man and the woman, and, with the coming of the child into that home, an understanding reverence for the enshrouding mystery of the co-operation of the man and the woman and God in the creation of life.

Flappers? Yes, who flap towards the uplands of sane living with brains inside those trim bobbed heads and healthy bodies within those short, sanitary skirts.

The experiment of a round robin letter, tried out last year, is being repeated by the Girls' Institutes this year, so that groups may pass along to each other during the year short accounts of what each branch is doing and finding helpful in this self-education.

It has been said that the centre of power in the impending social order will be woman. The girls of to-day will be the women of that to-morrow. On those little pink hands, bobbed heads and dreaming hearts will rest a heavy responsibility not only for the shaping ideals of that order but for the smooth working of machinery which will secure physical and economic health for the nation. The Canadian-born will or will not be, as she decides, and will live under such conditions as she decides. The nation will be a reflex of the home she makes, the community she helps to build, the schools she helps to manage. The seed sown will be reaped in that golden future to which the Women's Institutes of this silver year are looking forward, when everybody shall be healthy and nobody sick, when everybody shall be rich and nobody poor, when all shall be educated and no one ignorant.

A heavy responsibility for slim, young shoulders, but the girls of the Institutes are in training for it—four-square!

## REPORTS FROM GIRLS' INSTITUTES.

*Almonte* (*"Janey Canuck"*).—The membership of the Janey Canuck Institute has decreased during the last year. At present we have fourteen members. Two of our girls have gone to other districts to reside and three of our girls were married during the year. To each we gave a little remembrance that in after years will call forth pleasant memories of happy days spent with the Janey Canuck Girls. However, we have held our regular monthly meetings from home to home in winter time and in our Community Hall in the summer months, and kept interest alive in the Institute work.

As educational features we read and studied "The Little Blue Books" and "Why and How to Use Milk." We also had a Travelling Library. Our Literary Society was re-organized, but since many of our young people are attending High School and University the attendance was smaller than formerly.

We held our annual "At Home" Dance in our Community Hall in the Christmas holidays when our young people were home for the vacation. Owing to illness we were unable to hold our annual concert. However, we held a Valentine social evening, at which a debate, entitled "Resolved that it is More Advantageous to Marry a City Man with a Salary of $1,000 per annum, than a Farmer with 100 acres of Land," was given. The negative side won. We hold skating parties on the lake in winter time. We have a basketball team and play games with outside teams. Our annual Basket Picnic, to which the entire community is invited, was held in August, at the lake. The Junior Farmers, together with the Institute Girls, motored to Kemptville Agricultural Field Day. Aside from being an enjoyable outing, we found it a very instructive, well spent day.

We added some repairs to our Community Hall, and also completed the furnishing of some necessary lines for the "Janey Canuck" Private Room in the Rosamond Memorial Hospital, Almonte. We also gave some assistance to a needy family in the district who had much illness during the winter and held a shower of pickles and preserves for the Rosamond Memorial Hospital.

We feel that our Institute is a very small one, but we are all farm girls. We have all the girls in the district, so cannot add many new members. We have never once neglected our organization, because, aside from the work accomplished, a spirit of comradeship and friendliness amongst the girls has been formed which otherwise would not have existed. In the coming year we hope to accomplish more work, and as time wears on to improve more and more.

Next year the District Annual Meeting is to be held in the Community Hall, at Union Hall, for the first time. We will take great pleasure in welcoming all who can attend.

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*Komoka.*—In the way of educational work, our club holds their meeting twice a month, on the first and third Tuesdays. At each meeting we have a topic usually taken by one of the members. Our topics cover a fairly wide range of study. They are chosen by a committee every three months.

Some of the things we had papers on are: "A Course in First Aid," "A Woman's Education," "Milk and Its Care and Uses," "The Merchant of Venice," "Social Responsibilities," "Canadian Authors."

We also have a "Club Paper" containing choice poetry, cooking hints, current events, local news, and sense and nonsense. One girl acts as editor-in-chief for three months and different members look after the departments of the paper. At our meetings we have music (vocal and instrumental) and readings.

The social and recreational features have been:

During the fall and winter we had two community gatherings. One took the form of a Hallow'een Party and the other consisted of a debate and programme of music. At the latter a collection was taken up.

During the summer we held a "Lawn Fete." There was a programme consisting of music and readings. A booth was on the grounds at which the girls sold ice cream and home baking. This proved a financial success as we took in fifty dollars, some of which had to be paid out as expenses.

As an outcome of the Club we have a baseball team which is kept busy during the summer, playing with other teams.

In August the Women's Institute and the Junior Institute enjoyed a picnic together at Springbank.

At each meeting a collection of one cent a member is taken up in aid of the Sick Children's Hospital in London. We also donated some prize money to the local school fair.

Members of the Junior W. I. at Hillsburg, with a layette they made for relief in Northern Ontario.

*Ripley* organized at the close of their short courses in domestic science and sewing. They assisted the Seniors with music and literary sketches of Canadian authors at their meetings, co-operated with the Junior Farmers in winter programmes, and have as their chief objective for this year, the purchase and selection of new books for the public library, donating for a beginning part of the funds realized from a refreshment booth at the school fair.

*Cheltenham* motto is, "Let us be workers together for benefit to ourselves, advantage to others and the good of mankind."

The most interesting and important activity in our Institute this year has been our nursing course, because it was of great benefit to ourselves, helpful to others and we feel it will be for the good of the community about us.

*Alton* devote the first-half of their monthly meeting to business, work and addresses or papers, the second to social and recreational features. They combine training in homecraft with increasing funds by making and selling quilts. Towels made by themselves went to the Orangeville Hospital, and woollens to the fire sufferers of the north and to needy children locally.

They also invited the Seniors to join them in a short course in sewing.

*Thedford* have papers and music from members at their meetings, with an occasional talk from the Senior Institute. In connection with their homecraft

training they have had short courses in sewing and domestic science, and are planning for demonstrations at the monthly meetings by local talent. They also contributed $25 to the Children's Memorial Hospital in London, and a special prize to the school fair.

*Paisley* have papers prepared and read by members at their meetings, and frequently debates, matches and contests which enable all members to take part. They co-operated with the Seniors in aid of a soldiers' memorial, helped the school fair, and have some joint meetings with the Junior Farmers, having a different programme committee for each meeting which is always properly chaperoned and closes not later than 10.30 p.m. A sewing course was an educational feature of the year's work.

*Hillsburg* had a most successful short course in domestic science and home nursing last year, in conjunction with the young men's course in agriculture, put on by the agricultural representative. The young people drove in from a distance of eight and ten miles and the attendance at the girls' course ran up to 187 each

Girls' Circle in the Freelton W. I., with the layette which they made for Northern Fire Relief.

day for the greater part of the time. The Girls' Institute was organized from this course, and in June competed with other Girls' Institutes of the County in a judging competition held at Macdonald Institute. They also have debates with the Junior Farmers' Society. This Institute made a layette to be used for relief work in Northern Temiskaming.

*Bond Head* has devoted considerable time this year to the study of Canadian literature. They have also made a layette for the need in the North.

*Brampton Juniors* have had a university extension course in English literature, a judging competition at the fall fair, the team doing the judging at the school fairs. They had a departmental short course in sewing.

*Clayton* used a departmental travelling library and read "The Little Blue Books."

*Chesterville* avail themselves of departmental short courses and lantern slides, help public library, provided tooth brushes for school nurse to give the children, plan good monthly programmes and have a paper of their own, "The Eye-Opener."

*Delta* read and discussed "Little Blue Books" and "Laws of Ontario," and helped their public library, and provided firewood for a poor family in the neighbourhood.

*James Mills* (near Bradford) gave papers and demonstrations at meetings and had a spelling match.

*Lansdowne* gave papers and demonstrations at monthly programme; give prizes for clever designs and neat sewing. They aim to "widen their outlook" by having well known outside lecturers occasionally.

*Schomberg* Girls' Institute was reported at the convention by a poem composed by Miss Florence Botham, Schomberg. A copy of this poem may be had by writing either Miss Botham or the department.

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## GIRLS' JUDGING COMPETITIONS.

Ethel M. Chapman, Assistant Superintendent,
Women's Institutes Branch.

A feature of girls' work which has created a great deal of interest in certain parts of the province this year is the "girls judging competition."

Two of these competitions have been held under the arrangement of agricultural representatives, Mr. R. H. Clemens in Wellington County, and Mr. M. C. McPhail in Perth County. The judging teams in each case were organized from classes of girls who had taken short courses in household science during the year. A boys' competion in stock judging was held at the same time, so that when the judging was completed, the young people could have a field day together.

The Wellington competition was staged at Macdonald Institute, the contests being arranged by the staff there, and conducted by the senior students. The girls were required to judge bread and butter, using score cards; to judge an array of invalid trays, giving reasons for their placings; to identify an exhibit of meat cuts and to tell how they should be cooked; to judge plans of kitchens and drawings of furnished rooms. They were given an oral exercise in home nursing and first aid work, and one special contest was to judge a number of "living models," students who had dressed up for the occasion, to decide which girl was most attractively and appropriately dressed to go to church on a summer morning. The girls also had a contest in public speaking. The prize for the girl winning the highest number of points was a three months' course at the college.

In Perth County the competition was more simple. The girls judged bread and tea biscuits, and had a contest in hemming and making button holes. To help the girls to prepare for this competition score cards with reasons explaining the standards were sent out from the Institutes Branch two weeks in advance, and the benefit of this was very evident in the way they went about their work, and in the accurate and intelligent way in which they gave reasons for their placings. Public spirited people in the county were so interested in this work that on the day of the contest nine silver cups were arrayed for the inspection of the visitors—one for the girl or the boy scoring highest in each of the four contests for their class, and one for the girl or boy scoring the highest number of points during the entire contest. I had seen silver cups offered as prizes to

boys for stock judges before, but it was the first time I had ever seen a silver cup given to a girl as a recognition of skill in any kind of homecraft.

Other girls' judging competitions have been put on in connection with fall fairs, particularly in Peel County under the direction of Miss McIntosh, the home demonstrator for the county, the girls being required to judge certain classes of cookery and needle work exhibited at the fairs.

The great educational feature of these judging competitions is that the girls must be coached in the work for weeks previous to the contest, or they must study the work for themselves from score cards, and printed explanations of the standards followed. We can furnish such material to any group of girls training for a contest and could probably supply a judge qualified to judge the girls' work at the final contest. If any Institute wishes to interest the girls of the community in certain lines of homecraft we feel sure they would find this a very happy project. The ideal arrangement would be to have every Institute in a district or county organize a girls' judging team, assist them in getting the

A girls' sewing class at Silver Water, Manitoulin Island. While their mothers took afternoon lessons the girls had a class in the mornings.

necessary training and practice for their work, and put on a final competition for the whole district, either on a county fair day or on a day especially planned for the purpose with an exhibition of girls' work and a picnic or field day for the whole community in the afternoon.

## WHEN SHOULD A GIRLS' INSTITUTE BE ORGANIZED?

Miss Annie Jamieson, Renfrew.

My view is that a Girls' Branch should be organized in any small town, village or rural centre where there is no Senior Branch. I believe that the Women's Institute organizers sometimes make a mistake in this regard; that is, they organize the older women first. When a Women's Institute is organized, we find the young girls remaining aloof, believing, and sometimes they are justified in believing, that the meetings are slow, that the work does not add to

their enjoyment of life, in short, there isn't enough fun; so as a consequence we find only the most serious minded girls attend the meetings. To return to my point, a Girls' Institute organized and started off with a short course will be on a fair road to success. The Senior Institute can follow later.

Secondly. I believe there is room for a Girls' Branch in every small town or village in addition to the Senior Institute. The variety of work to be undertaken requires the closest co-operation between the two branches. I have had the pleasure of visiting many towns and villages and rural communities this summer, and one of the things which struck me most forcibly was the lack of organized play. Personally, I felt the need of athletic exercises. This condition, the girls could remedy. The Girls' Institute would bring girls from every church together, broaden their social life, develop the physical side and break up those social cliques which are so deadly to a proper community spirit. Girls in offices, teachers, shop girls, girls who keep house, etc., would all have a common meeting ground.

Thirdly. We will take a rural community where there are a large number of girls. Even if there is already a Senior Branch, there is no doubt a Girls' Branch would do much good. Take for instance a community where a number of girls are staying at home to help their mothers. They may have passed the entrace or may have put in one or two years at high school. To this class of girls the Institute will prove a boon because as the Handbook says, it is "a school for grownups." They can get quite a liberal education through the Institute and a much more practical one than is obtained at high school. These girls will be the very best homemakers that the country can produce. They become the leaders in the community, and the social activities, planned and managed by them, are of the very highest standard and tend to raise the standard of the whole community.

For these reasons a Girls' Branch is justified under these conditions—where there is a Senior Branch and a sufficient number of girls to attend and carry on the work.

Now just a few words on the negative side: I have in mind a rural community that has a Senior Institute which looks after the needs of the school and community very well. This community is near a town. The majority of the girls attend collegiate there, the rest belong to the Women's Institute. There is a community club for the young people, which looks after the social, physical and mental development. I feel sure that a Girls' Branch would not succeed here; in fact it is not needed very badly.

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## INCOME EARNING FEATURES FOR GIRLS AND WOMEN ON THE FARM.

EMILY J. GUEST, TORONTO.

The home rests on a material as well as a spiritual foundation. Man does not live by bread alone, neither does he live by spirit alone.

The economic basis of homemaking must be considered by us as well as its other sides. Love, good sense, training and sound economics are the four corner stones on which a successful home is built up. There is a spiritual value in receiving material rewards for our work. The farm home offers a better opportunity for business partnership than almost any other. Some of our members are cashing in on their special efforts besides adding variety and interest to their home duties.

In the consideration of income earning features for women on the farm, a three-fold survey must be made as a starter: First, of your farm and its productive possibilities; second, yourself (or daughters) and your capabilities; third, the needs of others or marketing.

Poultry and dairy products are of course the stand-bys as they fit in most easily and naturally with the management of the average Ontario farm and there is a steady market for them. One farm daughter made a bargain with her father by which in return for the feed and shelter she was to keep the household in eggs, turn the sale proceeds from the young cockerels into the family exchequer, and retain the rest of the hen money for herself. Out of this she clothed herself, started an embryo library, and her first bank account.

In a good fruit and clover country bees are frequently a source of income if you are specially adapted for their care.

Small fruits sold fresh or preserved, add to the income of other country homemakers, as do home grown vegetables.

The products of the garden where a good town or city market is within reach, yield fair returns if well handled. Onions, rhubarb, herbs, horseradish, flowers, apple butter, cottage cheeses are some of the products from which women are reaping pecuniary benefits too.

Since the advent of motors and good roads, one begins to see signs through the country, "Tea Room" or "Meals Served" here and there at farm house gates far from hotel accommodation on frequented highways.

Almost every woman has on her farm or has the ability to make something which will sell. The first thing is to decide what this is. Specialize. The next is to learn to produce the best possible of its kind and to keep the standard up. The short courses from the Department which will help you to develop your talents can be brought to your own neighbourhood. Literature and bulletins can be had from the Dominion and Provincial Departments of Agriculture, and expert advice and information from the professors at the Ontario Agricultural College at Guelph.

One woman said she would willingly pay fifty dollars if necessary for the training in canning, preserving and care of fruits and vegetables which her daughter had received in the short course in domestic science given at one centre last winter. The knowledge acquired was proving of the greatest value in dealing with these products of their farm.

In other cases the girls, after a course in sewing, not infrequently add to their income by utilizing their ability for the assistance of busy women in the neighbourhood who are glad to pay for it.

The third point in a consideration of income earning features is a study of markets and marketing.

Consider first the needs and possibilities of the people and towns near at hand. The nearer the market, usually the quicker and more satisfactory the results. Special customers, local merchants, exhibits in store windows, purchasers secured by personal canvas, and newspaper advertising are possible ways of making a beginning.

Co-operative marketing is much to be advocated, especially if it is desired to cater for distant markets. If a number in the same neighbourhood produce commodities of the same kind, aim at a high standard of product, standardize it, see that nothing goes out from that organization of an inferior grade, and do the marketing co-operatively, much better results in the long run will be obtained.

Helpful information along marketing lines may be had by writing to the Markets Branch of the Ontario Department of Agriculture, and the Live Stock

Department of the Dominion Department of Agriculture, the United Farmers' Co-operative, Toronto, or by consultation with the district representative of the county. Some of the reliable abattoirs too issue weekly price letters on request.

When good and reliable customers have been obtained hold them by selling high quality goods. Advertising wins you an opportunity. To hold the old trade and bring new, you must deliver the goods. It is the only way.

One Institute member, a farm mother and homemaker, began with a legacy of $11.65 which she invested in lines which could be carried on in connection with farm homemaking. She advanced from year to year in her business ventures, spending some of the income on the house until she had a perfectly equipped and labour saving home, her last purchase being a motor car!

But everything she did was well done. She "delivered the goods" in producing, selling and buying as well as in caring for her family and home.

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## SOME NEEDS OF THE COUNTRY AS SEEN IN THE COURT.

Dr. Margaret Patterson, Police Magistrate.

In my work as Police Magistrate, I have under my care the Court of "Morals," also "Domestic Relations."

In the "Morals Court" we have not only the women who have committed crime, but also the women against whom crime has been committed.

In the "Domestic Relations" Court all cases of domestic infelicity, from incompatibility of temper to bigamy.

Crime is but a symptom of some maladjustment, physical, mental, or social, and we can nver hope to do away with crime by punishment alone. It can only be cured by removing the causes producing it.

I wish to speak of some of the cases that come before me, not to criticise, but to present the problem, that we may work together for a solution. One could not spend even one day in the "Morals" Court without realizing the menace of the uncared-for feeble-minded. More than fifty per cent. of the girls appearing there are mentally subnormal. The hardest part of the work is dealing with these unfortunates while we have no proper means of caring for them. It is neither humane nor Christian to hold these girls responsible for acts, the temptation to which they are powerless to resist. Neither is it just to the normal citizen to allow the feeble-minded to be at large, spreading disease and immorality.

Those who are so mentally different from the rest of us that they cannot fit into the social scheme are really at war with society. War always means hardship, destruction and sorrow. No country can be truly prosperous in which such conditions exist. Even considered from the cold, hard angle of dollars and cents, it is a very unsatisfactory method of dealing with those who require special care. We are told that there are no funds to provide the farm colonies necessary for the proper care of those who will all their life require supervision, if not the protection of an institution. Yet, in 1921 Canada spent over seven millions of dollars on the present method, which is not in any way solving the problem. They are at present in our insane asylums, reformatories, jails, etc., for a short time, then they go out, only to return a little worse than when they entered last, having as a rule scattered venereal disease, been a centre of moral infection, or they may have given another feeble-minded illegitimate child to the country. There is no excuse for allowing such conditions to exist in these

days when it is so easy to remedy them by applying sane, scientific methods. The trouble is, the public have not been aroused to the magnitude of the problem. In the schools where there has been a proper examination of the children, it is found that from two to two and one-half per cent. are not normal. Many of these, if they could be given the special care and teaching they require, would develop, but if neglected they become a charge on the community, and a danger to normal children. Statistics also show that the feeble-minded increase about four times as fast as the normal.

In the State of Massachusetts where they are now endeavouring to handle the problem, after years of neglect such as we have here at present, the numbers are so large that the cost of caring for the mental defective is equivalent to one-half of the State taxes and more than one-quarter of the State expenditure. According to Walter E. Fernald, most of these cases could have been benefited by proper treatment in the early stage.

Now that we women have full citizenship, which means equal responsibility in the housekeeping of the State, let us face the facts and do our part to have these cruel conditions changed. All that is needed is to educate public opinion, place the facts before the people with the suggested remedy. The farm colony is no longer a theory or an experiment, but is satisfactorily established in many places. After it is once established, the cost of maintenance is very little, for nearly all of those who cannot make their living without supervision or custodial care, can, under proper conditions, be almost if not entirely self-supporting. In these farm colonies there is not only the work of gardening, etc., but a variety of industries are carried on. The inmates are segregated according to their mentality and housed in the cottages under the care of a matron. It gives them companionship and home life, protects them from being victimized by the unscrupulous, and protects the community from the danger that is bound to result if they are uncared for. Our country is now spending large sums of money in combating venereal disease. The greatest source of infection is the uncared-for feeble-minded. Eighty per cent. of the prostitutes are mentally subnormal. Can we afford to ignore or trifle with the problem? The sooner we undertake its solution the easier our task will be. Let us devote at least one meeting in every women's organization to a consideration of this problem; and when we are intelligently informed, go to our government and insist on the necessary provision being made.

There are other feeders of the Court, but this one so overshadows all the others, in fact is a factor in practically all of them, that one feels this is the crying need of the hour.

Probably the next in importance as a disturbing element in our social life is a selfish love of pleasure and a dislike of honest work. This manifests itself in a willingness to sacrifice all the finer instincts of life for its gratification. Girls are willing to put themselves in compromising positions to obtain a so-called "good time," viz., getting into automobiles with strange men and going for long rides into strange places at late hours. Often these cars are crowded and the girls sit on the laps of men they have never seen before. Too often this is the beginning, the "Morals" Court the end.

Not only our girls are in danger but our boys also. There is a certain type of taxi-cab driver who is a moral menace and a curse to any community. His plan of operation is to hang around the streets. When he sees a young man looking at the names of streets or in any way showing that he is not familiar with the locality, the taxi driver pulls up beside him and enquires where he wants to go. On learning the address he informs the youth that he is just going that

way himself. "Jump in and I'll give you a lift." Of course he is taken to a resort and enticed in on some such plea as this: "I have to run in here for a minute or two, awfully jolly people here, come in and meet them." Knowing nothing of the kind of place to which he is being taken, and grateful for the apparently friendly service of the taxi driver, he enters the house. Often because of lack of knowledge of the dangers of such places and the probability of contracting a disease that will wreck not only his own health but make it impossible for him ever to have a happy home and healthy children, he falls a victim to the infamy of the place. Should the police raid the house he is brought before me to tell his story. One's very soul cries out "how long?" How long are we parents going to let false modesty and prudery prevent our safeguarding both our boys and our girls with a knowledge of the truth. Let us also insist that every taxi driver who is convicted of any immorality lose his license forever. That would not only be protection to our young folks, but justice to the decent man who is earning his living in the taxi business.

The dangers of the dance hall cannot be over-emphasized. No matter how safeguarded by legislation, the commercialized dance is undesirable. Young folks must have recreation. None of us, young or old, can be normal without play, so let us open our homes and by having the recreation centre in the home put the commercial one out of business.

The dangers of the unlicensed, unsurpervised boarding and rooming house is a problem that requires our best thought and united effort to solve.

Only education will give a knowledge of the true value of things or a standard that will create a desire for the things that are worth while. We must do some positive teaching; too long we have let things drift, we have given no moral instruction, we have allowed the "movies" to be their educators. The amusements have gone outside the home and become a commercial project. The desire for reading has, to a great extent, been lost in the desire for thrills, rapid motion, etc. A publishing firm thought of getting out a new edition of "Fairy Tales and Children's Stories" that are almost classics, but before doing so they decided to ask a number of school teachers and those who have to deal with the growing boys and girls. The result of their enquiry was simply this: "A few years ago we would have said 'go ahead, there will be sale for them,' but to-day we cannot advise you to publish them; children to-day will not read." One teacher added: "I doubt if you could make the average young person of to-day even read Kingsley's Water Babies unless you used main force." May we not well pause and consider if with all our boasted advancement and scientific discoveries and inventions, we are giving our children as much real education as our parents gave us in the pioneer days. We had the advantage in those days of learning the dignity of work, and there is no better cure for the troubles of to-day than work.

Thomas A. Edison, when asked what he considered to be one of the greatest needs for the young people, replied, "I have never had time, not even five minutes, to be tempted to do anything against the moral law, the civil law or any law whatsoever. If I were to hazard a guess as to what young people should do to avoid temptation, it would be to get a job and work at it so hard that temptation would not exist for them."

When we turn to the "Domestic Relations Court" we are again confronted with the faults of our educational system, which fails to fit for life. Often the domestic unhappiness arises from the lack of ability to provide for a home on the part of the husband, and the lack of ability to manage a home and keep house on the part of the wife. During his school years, the boy had no opportunity

of manual training and so could not show in what line he had talent so that he might be fitted for the work for which he was naturally best adapted. On leaving school he drifted into odd jobs as an unskilled labourer and often out of employment, so the income is meagre and fitful. The girl had no more opportunity for learning housekeeping and homemaking. She, too, is unskilled and manages badly. She is ignorant of the fundamental principles of housekeeping. There is nothing so expensive as ignorance, so the income is insufficient and they are always in debt, moving from place to place, requiring help. What wonder they become discouraged and blame each other? The husband stays away from the house and a charge of non-support or desertion is laid and they come to our courts to have their grievance adjusted.

Often marriages are made too hastily, without either party realizing the serious nature of the marriage contract, and there is a failure of either or both parties to assume their share of the responsibilities of life. Spoiled children grow up and get married who have never learned to think of anyone but themselves. The problem of the feeble-minded is also seen in this court in one of its most serious aspects.

Perhaps the greatest cause of domestic unhappiness is the economic position of the wife. As long as the wife and mother is regarded as non-productive in a commercial sense and dependent upon the charity of her husband for her food and clothes, to say nothing of any spending money she may receive, it is surely an unbusinesslike partnership. The wife is in partnership with her husband in the conservation if not the production of the wealth that supports the home, and as such is entitled to some part of the profits of that partnership. How can this be remedied? Should the Marriage Act be amended and the wife assured of a certain portion of the income? Certainly for municipal voting, where property qualifications are required, she should be recognized as joint owner with the husband. At his death she is entitled to one-third of his property, why not during his life? There are many opportunities for us to serve "Home and Country."

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## FOOD PROBLEMS IN RELATION TO HEALTH.

Miss Bertha Duncan, Demonstration-Lecturer.
Institutes Branch.

There is a saying, "We are what we eat," which has greater significance than we realize. As we look about us, we do see a variety of types—the normal, healthy individual; the dyspeptic, the puny child, the rheumatic, the anaemic boy or girl, the rickety child—all of which do truly illustrate the result of food on the system.

Feeding the family to-day to produce healthy citizens involves more scientific knowledge than our grandparents ever dreamed possible. Even in our day it is a common occurrence to go into homes where there are members of the family ranging in age from the little children to the grandparents, and find the greatest consideration has been given to preparing a meal suitable for the wage-earner, with no thought whatever to a suitable diet for the little child. Is it any wonder that we have dyspeptic children, when they are allowed to eat meat, rich pastries, pickles and everything else of like nature which were never intended for delicate infant stomachs?

In order that food may meet all the requirements of "an adequate diet," it must supply (*a*) sufficient energy from the carbohydrates, fats and proteins;

(*b*) sufficient protein suitable in kind and amount; (*c*) sufficient ash constituents (mineral matter), especially calcium (lime), phosphoros and iron; (*d*) the A B, and C vitamines, and (*e*) a generous supply of water.

To an untrained housekeeper the suggestion of balanced meals causes great concern, but with all the available sources of education along the line of foods to-day there is little excuse for ignorance. In reading the following menu, it does not require a food expert to tell you that it is not a properly balanced meal:

MENU.

Potato soup. White bread.
Mock Duck with bread stuffing.
Mashed potatoes. Baked beans.
Baked rice pudding. Tea.

The very suggestion of it would indicate that it was overloaded with carbohydrates as well as being an uninteresting meal. In planning a meal, one has to consider the requisites of an adequate diet, and, as far as possible, provide everyday food which will meet these requirements.

Little need be said about proper methods of cooking, more than to emphasize the effect of the application of heat on various materials. For example, (*a*) starch grains, when properly separated, may be gelatinized by boiling temperature, and the cellulose softened. (*b*) Protein foods should be cooked below boiling point to prevent the hardening of protein. (*c*) Fats should be cooked at a temperature which will not cause them to decompose. All foods should be cooked by methods which will avoid scorching, as scorched foods are irritating to the digestive tract.

Since vitamines play such an important part in maintaining health and growth, it is essential to know some of the scientific knowledge gained through the work of prominent food experts in relation to the effect of heat on these substances. Vitamine A stands a temperature of boiling point (212° F.) for a limited time—as much as four hours. Vitamine B deteriorates rapidly with heat, depending on the food, therefore it is necessary to shorten the time of cooking. This may be accomplished by putting foods to cook in boiling water, and by using a small amount of water, so that it is not necessary to boil down the water in order to use the liquid for sauces, etc. On the other hand, one has to consider the factors of getting rid of odours and softening cellulose, in relation to the amount of water used and length of time for cooking certain vegetables. Vitamine C is not stable to heat, as in the case of milk. Pasteurization destroys Vitamine C in milk, hence the practice of using orange juice or tomato juice when pasteurized milk is used for infant feeding.

When all members of the family are healthy individuals with healthy appetities, the problems of the housewife are not so difficult, but is her duty to keep those members of her household strong, healthy and efficient citizens, and in case of delicate members of the family, she has to consider ways and means to make food easy to digest. Regularity of meals is a most important factor. We are all familiar with the result of eating candy and cake between meals and the inability to eat at table, also of the late breakfast, early lunch, and late dinner, which interfere with partaking of sufficient food to meet the requirements of the body. Too great stress cannot be placed on the importance of thorough mastication as a means of finely subdividing foods and rendering them more easily available for the action of the digestive juices of the mouth, stomach and intestines. With young children it is possible to educate them to eat more slowly than it is to change old habits formed by "grown-ups." One can give them foods which require chewing to get down the throat and by continuing

this daily, and by withholding liquids which would most likely be used to wash down the food, they soon form the habit of mastication, especially if they are educated in the physiological value in their desire for growth. Serving foods in courses is a valuable aid in preventing hurrying over meals. Careful application of heat to foods in order to cook starch, protein and fat at the temperature which renders them most easy of digestion is another point of importance.

Sometimes concentrated foods interfere with digestion, and this difficulty may be overcome by dilution of the food, thus making it more suitable. Other foods may require solution to render them more easy of digestion as is accomplished by pre-digestion—a familiar example of which is the pre-clotting of milk by junket tablets. Food proportions of protein, carbohydrates and fats should be maintained in the daily diet. People should not be allowed to eat certain foods simply because they like them, for possibly they may be overloading their system with substances which will set up digestive disturbances and ultimately result in disease. For example, meat eaten in too large quantities may cause rheumatism, since it is an acid-forming food.

Care should be exercised in having proper sequence of food in the meal to avoid chilling, irritation and suppression of secretions. Foods which cause irritation are concentrated acids and sugars, spices and condiments, very hot or very cold foods, coarse, rough particles and decomposed foods. Great care should be exercised in providing sterile foods, and regulations relating to the handling of foods to protect human beings from disease-producing germs cannot be too strongly enforced. All persons do not like the same foods, so in some instances it is necessary to recognize individual idiosyncracies, but on the other hand, it is possible to overcome many likes and dislikes by preparing foods in such a manner as to disguise the objectionable quality. By combining foods this is possible.

For most satisfactory results it is advisable to have at least one hot dish in the meal, and this fact will justify the expenditure for equipment for the rural school lunch, because of the benefits derived by the pupils. It is not necessary to have elaborate meals to promote good health, in fact the simple diet which does not have too many types of food is much more beneficial, providing it meets the requirements of "an adequate diet" and the food is properly cooked, nicely served and sufficient time allowed to eat the meals properly. There is so much rush in the world at the present time that people underestimate the value of time spent at the table. Much education is necessary for the appreciation of this fact.

The housewife is frequently criticized for the length of time she spends in preparation of meals, but adverse criticism does not always have good foundation, and the efforts spent in making food attractive has a greater influence on the digestibility of food, and the aesthetic side of the meal, than appears on the surface. If we learn to serve our "every-day" foods attractively, with as little expenditure of time and energy as possible, we will be rendering a service to our fellow beings which will aid in making healthier citizens.

Scientists have discovered that in the case of dogs, scolding while they are eating retards digestion. This scientific principle is equally applicable to human beings, and should teach us to make our conversation at table as bright and uplifting as possible, so that the reverse principle may be the result. Unfortunately, in many instances, when all are gathered together at the table is the time when all faults and shortcomings are brought to the attention of the family. If we look for good qualities in people and give less prominence to their faults, we can do much to make this world a better place in which to live.

Linked up with healthful living is the influence of proper clothing. Present-day fashions with the large waistline are much more conducive to health than the "wasp waists" of a generation ago. Deep breathing is possible only when there is no restraining clothing and should be one of the daily, yes, hourly habits formed by every individual who aspires to have perfect health, since it plays such an important role in the utilization of food for fuel and body building purposes.

People often wonder why they are so troubled with constipation, but they overlook the fact that they are daily disregarding one or more of nature's safest preventatives. Some of the causes of constipation are: (*a*) Disregard of the stimulus of the sphincters or muscles of the rectum; (*b*) lack of ballast; (*c*) very rapid rate of absorption; (*d*) lack of exercise; (*e*) restraining clothing; (*f*) too much fat in diet; (*g*) nervous disturbances; (*h*) lack of regularity of meals and defecation; (*i*) lack of water; (*j*) defective internal secretions. To counteract or prevent constipation by nature's method instead of resorting to the use of drugs, etc., the generous use of fruits, cereals, nuts, fats and oils, and an abundance of water, combined with proper exercise, will give the desired results, and leave the system in normal, healthy condition. Reasons for the use of these foods are that some contain cellulose which supplies ballast for the intestines, and stimulates the peristaltic action of the bowels; bran of cereals also stimulates peristalsis; fruits and vegetables contain cellulose and regulating acids; all kinds of oils—animal, vegetable and mineral—stimulate peristalsis, a generous amount of water taken the first thing in the morning or arising and the last thing at night; these are all valuable aids in the elimination of waste products of metabolism from the system.

When food has been carefully handled as it passes through so many hands until it reaches the consumer, it is necessary for the housewife after purchasing such food to safeguard the health of the people by watching it carefully in the home, so that no food shall be served which has been kept long enough for decomposition to set in and probably cause disease. She must be careful in the handling of canned goods to not leave any food standing in an open tin. It should be immediately turned into a porcelain bowl to prevent injurious and poisonous compounds being formed. The same principle holds true in the use of chipped enamel dishes. Any person suffering with any communicable disease should avoid handling foods used by other members of the family, in order to prevent transfer of disease. A familiar example is that of an outbreak of typhoid fever being traced to one milk producer in whose family one member was suffering with typhoid. To protect the consumers of milk from the pathogenic or disease-producing bacteria, it is compulsory in cities and up-to-date towns and villages to pasteurize the milk. Pasteurization effects the digestibility of milk, and is sufficient to destroy vitamine C, but its effect on the destruction of pathogenic bacteria is sufficient to justify the process, since vitamine C can be easily supplied from other sources, and the effect on the digestibility of the milk for infant feeding can be overcome by the use of "certified" milk.

To bring the topics suggested in connection with "Food Problems in Relation to Health" more forcibly to the Institute members than is possible here, there are a number of available sources of help through which each topic might be enlarged upon and discussed from different viewpoints, so that much valuable knowledge might be gained, and steps taken to improve the health of every community. Some sources of help are as follows:

(*a*) Department of Agriculture Bulletins.
(*b*) Courses of Demonstration-Lectures in Foods and Cooking.
(*c*) Macdonald Institute and similar Institutes.

(*d*) Magazine articles written by approved Household Science graduates, doctors and nurses.
(*e*) Institute members who study topics assigned to them for a meeting.
(*f*) Travelling Libraries.

If each of our 998 branches of the Ontario Women's Institutes had the slogan, "Better Health for Our Community," and each member of each Institute put forth her best effort to enforce that slogan, Ontario would soon find the eyes of the world focussed upon her in an endeavour to find ways and means to raise the standard of health of other nations to that of our beloved province.

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## MORE MILK FOR COUNTRY CHILDREN.

HELEN G. CAMPBELL, DEPARTMENT OF AGRICULTURE, OTTAWA.

After outlining the work of her particular field in the Dairy and Cold Storage Branch of the Dominion Department of Agriculture, a work which has for its object the dissemination of information concerning the utilization of milk and its products, Miss Campbell said:

There are many under-nourished or improperly fed children in this country, whose condition, both physical and mental, would be greatly improved by a more liberal use of milk in the diet.

There are two ways in which Women's Institutes and other similar organizations can assist in this work:

1. By encouraging a greater consumption of dairy products by the rural population.

The necessity for this work is proven by the extent to which malnutrition is present among the school children from poor and well-to-do homes in the rural and urban centres of Canada. While there have been conducted in this country no extensive surveys which we can use for national application, the results of such surveys in the United States and in various cities and localities in Canada show a great similarity and indicate that from 20 to 33⅓ per cent. of the total number of children of pre-school and school age are "sufficiently under-weight to require treatment for malnutrition." The findings of the Montreal Canadian Patriotic Fund Health Clinic approximated more nearly the higher estimate of 33⅓ per cent. Out of three groups of 1,000 children, the numbers of under-nourished were respectively 299, 260 and 204. Dr. Wood, of Columbia University, New York, from a careful study of half a million country and city children, estimates that 16.6 per cent. rural children and 7.6 per cent. city children are under-nourished. The view that there is as much, and in many districts more, under-nourishment among country children than among city children is shared by many public health nurses and other workers. It is significant, too, that those who have made a study of the situation hold the view that country children use no more, and in many cases, much less milk than is used by the children in urban centres.

Among the causes of malnutrition are diseased tonsils and other physical defects, lack of sleep, wrong food habits, the most common cause being improperly or unwisely chosen food rather than an insufficient amount. Among the defects are a lowered vitality and retarded physical development. It retards mental development also, as is shown by the fact that two or three times more cases of malnutrition are found in the retarded mental cases than in normal mental cases. The remedy for this situation in rural communities rests to a

large extent with the Women's Institutes and the following steps to this end are suggested for consideration:

(*a*) A survey of the school children to find out the number of children in the district underweight.

(*b*) A survey of the amount of milk used daily by each child in his own home, including the amount used alone and in combination with other foods.

(*c*) A "Carry Milk to School" campaign with the object of persuading children to bring a pint of milk each morning to supplement the noon-day lunch, or to use as a mid-morning or mid-afternoon lunch. Very beneficial results have followed the systematic use by children, particularly underweight children, of one-half pint of milk in the middle of the morning and afternoon periods. Such a campaign should include instruction as to the food value of milk, advisability of drinking milk slowly, ways of including it in the diet and its proper care in the home. The interest of pupils and parents will be stimulated by an essay competition, or by the offering of a small prize for the best poster illustrative of these topics.

(*d*) A record kept of the amount of milk used by each child in school and at home after the campaign has been started and a record of the actual gain in weight each week. The co-operation of the teacher will be necessary for accurate records and the suggestions and advice of the medical practitioner will be invaluable.

(*e*) The encouragement of the preparation of dairy dishes for competition at school fairs to take the place of part of the cakes and pies upon which so often the chief culinary effort of children is expended.

2. By encouraging the production of an adequate supply of dairy products of the first quality.

Women's Institutes by taking steps to encourage a greater consumption of dairy products and other suitable foods, as well as encouraging proper health habits, will be doing the best kind of preventive work and making a contribution not only to agriculture but to public health and citizenship.

Milk is more easily contaminated than any other food and the importance of the utmost care in handling it and of scrupulous cleanliness in all branches of dairying cannot be too strongly emphasized. A "Cleaner Milk" campaign by the members of the Women's Institutes would be an effective and far reaching contribution towards the betterment of home and country.

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## INCOME EARNING FOR FARM WOMEN.

Mrs. K. S. Aitken, Beeton,

In these days of rush and bustle we hear so much of the "new woman"—this strange creature, who roams up and down the earth seeking what jobs she may devour—that we are forced to consider just what conditions gave rise to this individual, and very often we find that this job-holding woman has had the honour thrust upon her as it were, because she actually needs the money. This is particularly true of women living on the land. The hard times of the last two or three years, coming as it did after years of prosperity, brought to the life of many women this question—How can I make some money to help along? The answer to this has been a battalion of life! Home women turning their time (not spare, for they haven't any) into money. It is toward these women and

their activities that we have our eyes turned to-day to see just what has been done and how accomplished.

Any successful business we are told, must be built on absolute honesty and attention to detail, and this is true perhaps to a greater extent of a small business. You must realize that your name on a pound of butter, a carton of eggs, a pot of jam should be the guarantee to the consumer. As business women, you must be strictly honest. You must stand behind your every product and say: "This article is good; it is up to standard, for my name is on it." This is the first essential of a successful business.

Now as to the fields a home woman may enter. It would seem that of necessity they must be limited. Such, however, is not the case. Indeed, the difficulty is only in the choosing. Those we most frequently think of, that lie closest at our hands, are the raising of poultry and the making of butter. Women are especially fitted for the poultry business since there is so much detail in it. Now suppose as a farm woman, you are seriously thinking of chickens as income earners. Do you know that the market for good eggs is practically unlimited—that only 1% of the eggs produced in this country come from commercial poultrymen—and that the farmer produces the 99%. Probably you have a flock of some sort. Ask your agricultural representative to go over your flock with you. He will carefully cull your birds, show you which birds are paying guests and which are star boarders. The culls should be penned up and fed properly for market. Don't sell them alive to the first buyer who comes along. That's just throwing your money away. Your adviser, the agricultural representative, will see that you get the poultry bulletin which will tell you how to fatten, kill, dress and ship your birds.

Now as to your good birds, what sort of housing can you provide for them? To pay you, they must have a dry, sunny, well-ventilated pen, free from drafts, and with good light. Perhaps your pen doesn't suit you, and possibly your men are from Missouri and must be shown that this scheme of yours is going to pay. In that case, buy some nails and a bundle of laths, tighten up every hole, north, east and west, put cotton fronts on the south, fill your pen six inches deep with straw. Don't crowd your birds. Feed according to your bulletin, and then gather the eggs. When your men folk see that you are going to succeed and also what a horrible amateur carpenter you are, I think probably they will help. Briefly, if you want to make money from poultry—first, cull, getting into one breed if possible, give your birds good feed, fresh water, sunlight, deep litter and (so says one poultry man) kindly appreciation, and your egg basket will be filled.

Then as to butter. That begins of course with your cows. Do you know what breed of cow makes the most butter? Find that out first of all. Of course you can't change your herd all in a night as it were. You don't want to; but at least it gives you something to work up to. Here again your Government is waiting to help you, and the first step again is culling. Test and weigh the milk from each cow so that you can say which cow pays for herself. Go into feeds. Some make milk, others beef. Find out which is which and see that your cows get what they need. Possibly you have made butter, and good butter for years. Nevertheless get the bulletin on butter making and use it. There is one woman for whom there is no hope—the woman whose mind is closed to any suggestion or new idea since her grandmother made good butter without any of this folderol. She is in the same class as the woman who thinks tartar is a protection to her children's teeth. So, therefore, if on reading your Government bulletin, you feel a sniff of contempt coming—choke it. If you

are making any quantity of butter provide yourself with a butter worker. They are easily made and the butter is of nicer texture than if worked by hand. For good butter, as for fresh eggs, there is a splendid market; apart from the satisfaction we all take in turning out an excellent article.

Possibly the next most interesting work is small fruit farming and orcharding. Small fruits, which formerly were grown on nearly every farm, are now almost non-existent. Last year black currants sold for $3.50 a basket, red currants and gooseberries almost as high, and so long as labour continues to be such a luxury, these prices cannot be much lower. Two or three years ago a row of black currants was planted beside one of the poultry buildings at the college in Guelph, for shade for the young chicks. They were given very little cultivation. Mostly scratching by chicks, and this year the crop sold for more than $200. The raspberry industry has been almost wrecked by those two devastating diseases, mosaic and leaf curl. Hardly a plantation but has been affected; but here again if you wish to go in for raspberries your Government will assist you. You can get a list of nurseries whose stock has been inspected and found sound and so embark on your adventure, knowing that you are beginning with the best stock. For the woman who enjoys making things grow, there is no pleasanter occupation than the growing of berries, cherries, apples, etc. This industry dovetails splendidly with canning. Home canned fruits, jam and pickles are always good sellers, but in this as in everything else, the essential is knowledge and a passion for detail that will tolerate no slip-shod work. For the home canner who either delivers her orders or ships them, a pressure cooker is a necessity as one jar of fruit which goes bad will spoil a good reputation. Also have an adequate system of sterilization so that in all confidence you may sell your product with no fear of it returning in an almost intoxicated condition. This combining of the growing and canning of fruit is an ideal union since your fruit may be done when in just the right condition and also when perfectly fresh.

For the woman to whom "a garden is a lovesome spot" the raising of flowers for sale is not only a joy but an income producer. This industry flourishes best near a city or large town since the demand here is of course so much greater. We were very much impressed with the number of farms raising flowers surrounding the city of London. One has no idea what an attractive appearance it gives the farm home and it is also very profitable. If you decide that this is your life-work, give it really careful consideration. At present perennials of the so-called old fashioned type are very popular, delphinium columbine, larkspur and of course peonies. Once well started these are not difficult to keep in order. They need the same basic attention as a hen or a cow, sunshine, water, good food and loving care. Could you specialize in tiny nosegays? Could you have your own cold frames? Could you take a standing order for invalids? But of course you can and a hundred other individual things if your heart and soul are bound up in your work.

We come now to the more restricted occupations, sewing and handcrafts. Nowadays children wear such adorable clothes that to anyone with genius in her finger tips, they are a joy to make and a pleasure to behold. Readymade garments for children are not often satisfactory. They are quaint to view before washing, much quainter afterwards. Think what it usually means to a busy mother if she knew that Jean's rompers and Jack's overalls, would emerge from the tub still rompers and overalls (minus the dirt) and not some queer distorted things she hardly knew. And we can buy such splendid materials nowadays. Why the possibilities which lie within a bolt of unbleached cotton

would make a pirate dizzy—children's clothes, curtains, table runners, dresses, almost anything. It washes well, will take any dye and wears splendidly.

When we consider the aristocratic eminence to which hooked and braided rugs have risen, the woman who can do this work may consider herself lucky. We hope the proud position these hand craft products occupy will repay them for the expulsion they induced when Brussels carpet "came in." And so we might go on. The list of things we might do is endless—but the hard end remains, the successful marketing of our products.

Until co-operative marketing is an established fact the most successful way of selling is direct to your consumer. You know your product is good. Well then, go to your nearest large centre and sell your eggs, or butter or your hens, your personality to reputable customers. Most of them will be glad to deal with you directly, thus assuring themselves of a perfectly fresh and good article. Of course you will be let down by some of your customers, but weed them out and keep right on, remembering always, in season and out of season: Never sell and off-day product; keep that for your long suffering family. If your output grows to be too large for private trade, go to the best hotels and clubs. The price will not be quite so high, but it will be considerably better than your local market. Make up your mind to sell to as good advantage as possible and keep so enthusiastic about your product that others must enthuse with you.

May we not speak to the older women of our communities to whom this branching out of the younger women is a new and not too nice thing? Be kind to them, give them credit instead of censure. They are Canada in the making, so see to it that your fellow citizens are honoured, not pulled down.

And finally, to those of us who draw our bread from the land, to whom, while money may be scarce, actual food is always abundant, let us remember those less fortunate—the Hospital for Incurables, and we can walk; the Sick Children's Hospital, and ours are strong and sturdy; the Blind Soldiers, and we can see the sky. Should not these names touch us? Should not we carry these afflicted ones in our hearts and lives, and give of our abundance, that their bodies and souls may be cheered?

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## BEAUTIFYING THE COUNTRY HOME.

W. T. Macoun, Dominion Horticulturist, Ottawa.

The Women's Institutes can do much to encourage the beautification of the surroundings of the rural home and the individual members can make a great change by their own hands.

There is so much intercourse nowadays between those living in the country and the towns that any contrast in the appearance of the city and country home is impressed upon those who frequently come to town. Young people, especially, notice the difference between the well-kept lawns, shrubbery and flower borders and the vince-clad verandah and walls of a house in the city and their own home, often to the great disadvantage of the latter, and this, among other things, helps to take away the boys and girls from the country. It is true that there are many unattractive looking homes in the city, but it is the streets of well-kept houses that attract the most attention. There are some beautiful homes in the country also, which demonstrate the great possibilities for making rural homes attractive. Indeed with the greater amount of land available and the purer air and more abundant sunshine, it should be easier to have finer grounds about country than city homes. The reason given for so little being done about

the average country home is that there is no time. It is true that the time when planting should be done is when the farmer is busiest outside, but who is there will say that, if the will to do it is there, a few hours cannot be found to plant a few trees or shrubs, a vine or two, a hedge, or to make a flower border? If even but one tree or shrub were planted each year in a very few years there would be a wonderful change.

To begin the improvement, a good lawn should be made, even though it be but a small one. First, decide on what it is possible to keep in good condition, and then prepare the ground well for the lawn. It is hard work to keep rough ground in condition, but, if a little trouble is taken to make the surface of the soil level before the grass seed is sown, the work of cutting it with a lawn mower is reduced very much indeed. If there is a lawn at present, but a very rough one, it should be levelled. It may not be necessary to plough up the ground,

Trees planted now will produce a home setting like this for future generations.

but early in the spring good soil may be brought and raked over the old sod, filling in all the low spots and making the ground level and the surface fine with a garden rake. Then it should be seeded early with Kentucky blue or June grass seed at the rate of about seventy pounds per acre. In places where the old grass was not smothered by the soil, it will not be necessary to seed. By keeping the weeds cut as often as they are large enough to cut them with the mower or scythe, there should be a good lawn established by the middle of summer, after which mowing once a week will bring the lawn into good condition. Where the ground is very rough it will pay well to plough it and then thoroughly harrow and bring the surface into good condition with the rake. Make the highest part of the lawn next the house, and then rake away from it either on the same level or with a gentle slope downwards, removing with the rake the old grass

and weeds, roots or anything else which prevents having a fine surface, then seed to lawn grass, and the earlier this is done in the spring the better.

It will make a great improvement if the part which it is intended to keep trim and neat is separated from other places by a hedge. The arbor-vitae or cedar, which grows wild so abundantly, is one of the best plants for this purpose. The lawn should not be cut up with flower beds. These should be at the sides or in the corners as an unbroken piece of grass is one of the most pleasing sights. Vines make a quicker change than almost anything else about a place, and some of the best of these can be got for nothing from the woods, such as the climbing bittersweet, wild clematis and Virginian creeper, the self-fastening variety of the latter being the best.

Trees are very desirable for beauty, shade and protection from wind and to screen unsightly outbuildings from the front of the house. When large growing

A good example of massed shrubs and flower border.

trees are planted for shade it is desirable to plant them little less than one hundred feet from the house, and, even if the lawn does not extend that far, by the time the trees grow to be a good size the lawn can be extended to them. Trees are often planted so close to the house that they shade it too much. A few years' growth on a tree when it is placed in just the right place will, at least, partly hide the outbuildings from the front lawn, and very few are needed to accomplish this. And then, a clump or irregular group of evergreens, of pines, spruces or arbor-vitae, on the north or west sides of the house where this is possible, will break the winds in winter and give an air of comfort to the home at that time of year. Two of the best trees for shade are the sugar maple and red oak. Other trees which are good are basswood and white ash and the hickory, though a slow-growing tree, makes a beautiful specimen and is useful for the nuts it bears. The Wier's cut-leaved maple is one of the most beautiful weeping trees.

It grows to be a large size as it has a spread of sixty or seventy feet in time. It is a variety of the silver maple. One of the best small trees is the mountain ash.

Some of the best shrubs are the spiraeas, hydrangeas, bush honeysuckles, lilacs and Japanese roses, although there are many others.

Women have so much influence in the home that, if the Women's Institutes take up the question of home beautification with enthusiasm, we are sure that much can be accomplished. If it were possible to make an Arbor Day so popular in the country that practically every farmer would devote a certain half day every spring to some permanent improvement about his home, the change which would be made in a few years would be very marked.

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## HOUSES BUILT FOR COUNTRY LIFE.

ETHEL M. CHAPMAN, TORONTO.

Perhaps the greatest charm of a country home lies in the fact that we are in no way limited by the cramped conditions of building in a town or city. There are no narrow frontages, no neighbouring buildings to shut out the light or clash with the style of architecture we had planned for our own—nothing but the natural conditions of the site and the contour of the landscape to consider in our architectural design. There seems little to prevent each individual expressing in the building of his own home his ideal of a beautiful, livable farm home, yet we find whole districts with practically every house built after exactly the same model, and this very often a stilted, inconvenient imitation of a town house rather than suited to country surroundings and the needs of farm life.

The houses shown here are distinctly farm types, of a simplicity and artistic beauty in keeping with an environment of fields and hills and trees, each is typical of a style of architecture adapted to country building, some of them offer suggestions for remodelling, all are planned with a view to securing comfortable, healthful living conditions and convenience in doing the housework. This last is a feature which we have been rather slow to recognize in planning our houses, but the servant for the farm home has evidently gone to stay; whatever help the farmer's wife is to have for the future will be mechanical and much of it must be provided for in the building.

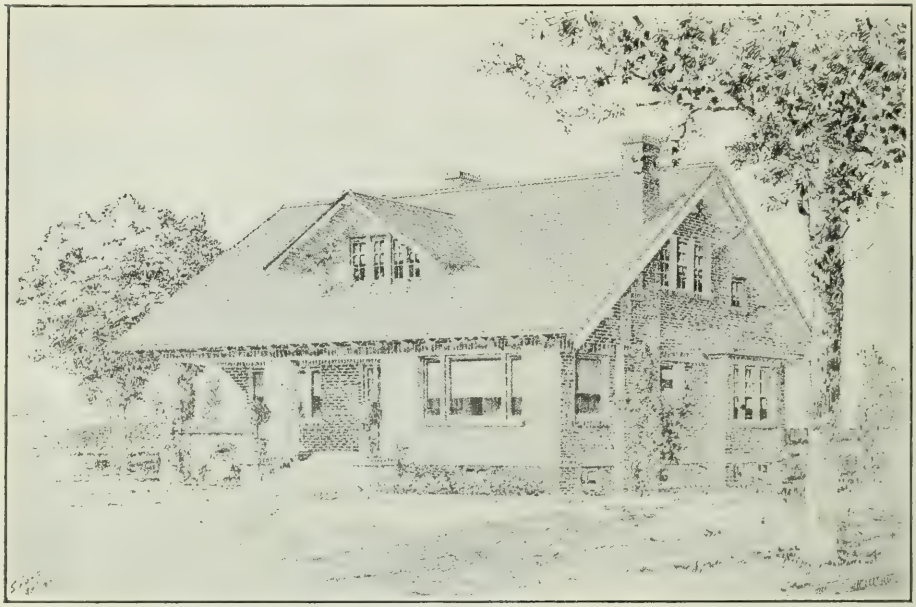
The brick bungalow is particularly substantial and snug looking, an excellent type for the prairie or a site on a windy hill if a house must be built there. There is also something charmingly quaint and suggestive of home and shelter in its simple lines, the pleasing arrangement of windows, the brickwork about the porch, the outside chimney and dormer and bays reaching out only far enough to catch the sun without breaking the regular compact arrangement.

The interior layout is simple. The front door opens into a hall with a living room on one side, an office on the other and the stairs placed in the usual way. As this is a comparatively small house, and the hall opens directly to both kitchen and living room no space is given to a second stairway. The living room and dining room are made especially cheerful by having groups of windows on two sides, a large window alcove in the dining room, a fireplace in the living room and a wide arch with sliding doors between the rooms so that the two can be thrown into one. The living room is large because a living room in a farm home should be large enough to accommodate a reading table, and a piano and a wide circle around the fire and a place for games on winter evenings, or on occasions, enough floor space for the Virginia reel.

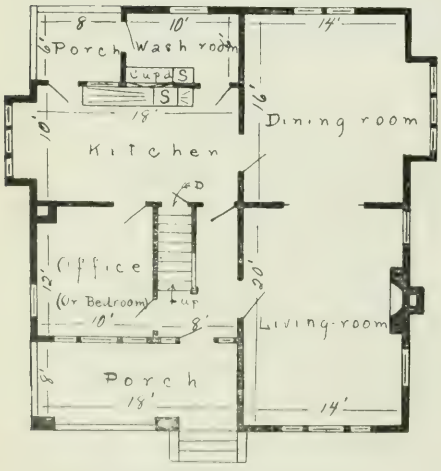
The office may seem a non-essential until we have had one and know its

convenience. It is not only a room for a writing desk and a place for filing letters and papers and the important business documents which used to be kept in the clock. It makes a quiet retreat for any member of the family to study or read or write—a spot not to be found in many of the largest homes. However, if the family feel that they want a bedroom downstairs more than an office it is in a position where it may be used conveniently either for a regular bedroom or a guest room; it might then be well to close up one of the doors.

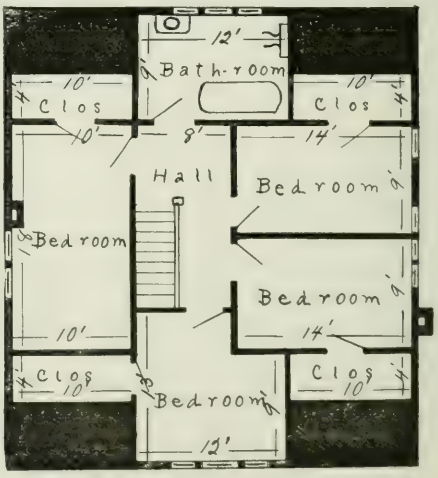
The kitchen has a wide bay window and opens to a porch where the housekeeper can take some of her work in hot weather. From the same porch a door



A snug looking bungalow for a prairie, or a site on a windy hill.



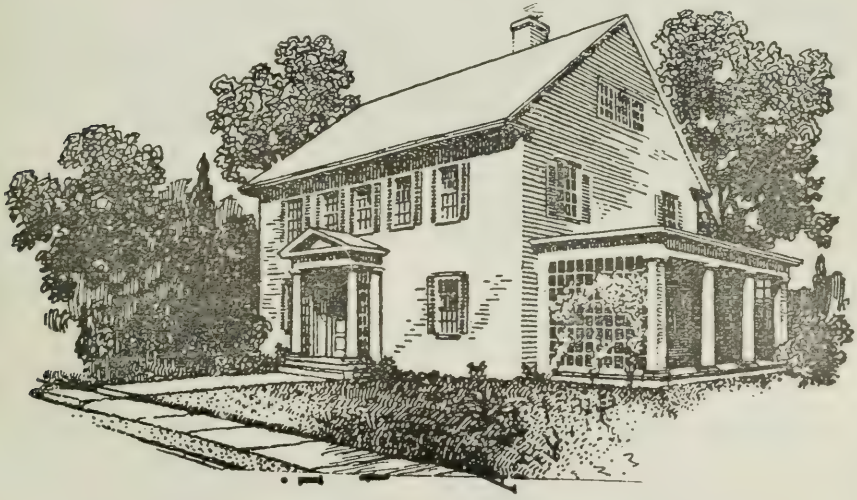

Ground floor plan.



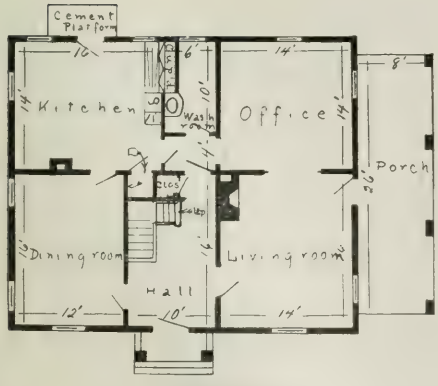

Upstairs floor plan.

opens to a washroom; with this arrangement the men can wash up before coming through the kitchen to the dining room, or on wash days, if the tubs are set here, there is no unnecessary tracking through the kitchen. The sinks in the kitchen and washroom being placed directly opposite gives a simple arrangement of plumbing, while the kitchen cupboard being built back in the partition walls allows for a wide drainboard at the left of the sink. This, as very housekeeper knows, is the most convenient arrangement—a short board for stacking dishes at the right of the sink, a long drainboard at the left with the cupboard above. Having a window close to this "working station" is also a great help. The plan does not provide for a pantry; with a good arrangement of cupboards a convenient cellar and a washroom to leave the kitchen free for culinary work, a pantry does not seem necessary.

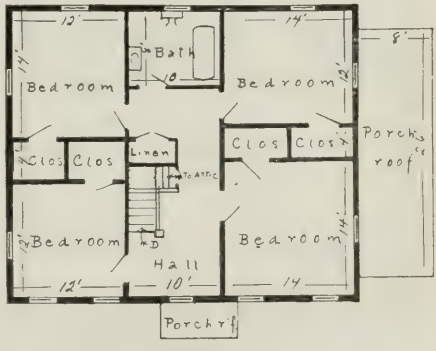
The layout of the rooms upstairs explains itself; the roof sloping right down to the first storey at the front and back brings the ceilings low at the four corners; the dormers in the middle of the roof at both the front and back allow full head room for a bedroom at the front and a bathroom at the back. The low spaces in the corners are taken into clothes closets.



The Colonial front and the side porch offer suggestions for remodelling a plain "oblong" house.



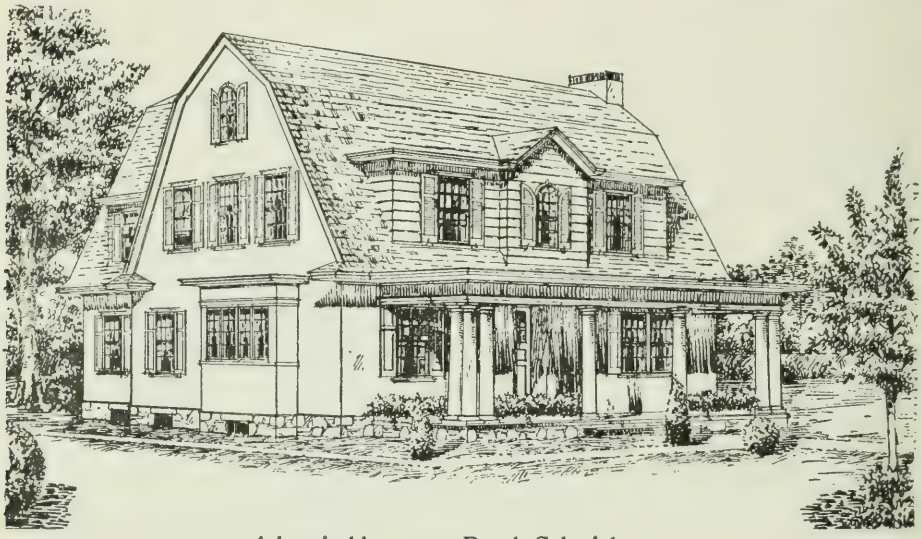

Ground floor.



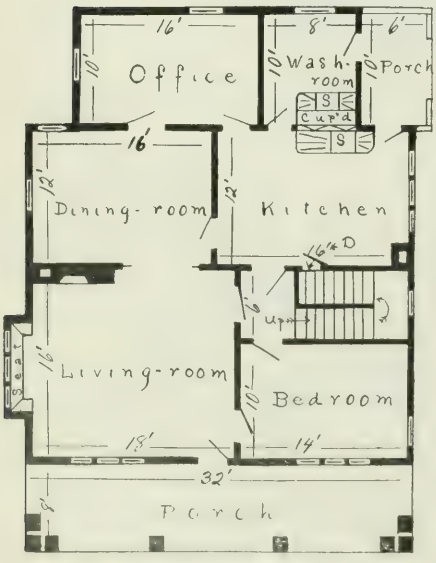

Upstairs floor.

The second house is a good specimen of the plain, colonial type. There is a dignity in its square, substantial proportions and a hospitality about its broad front, particularly desirable in a farm home. It also offers some practical suggestions for remodelling; the plainest of square, straight-roofed houses, built after the plan of many of the older farm homes, would take on an air of pleasantness if given the front pillared portico, and broad latticed side porch shown here.

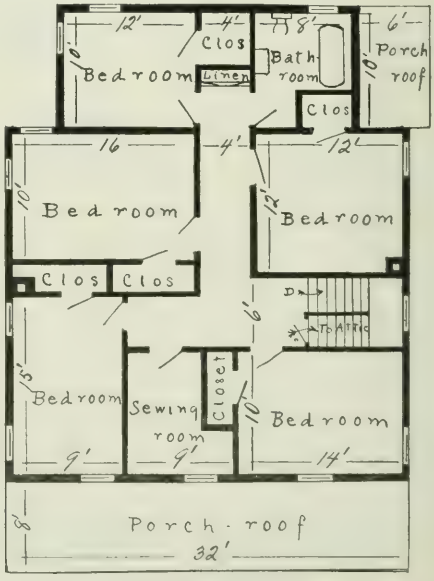
There is no waste space in the interior arrangement; we have two full storeys and an attic allowing for living room, office, dining room, kitchen and



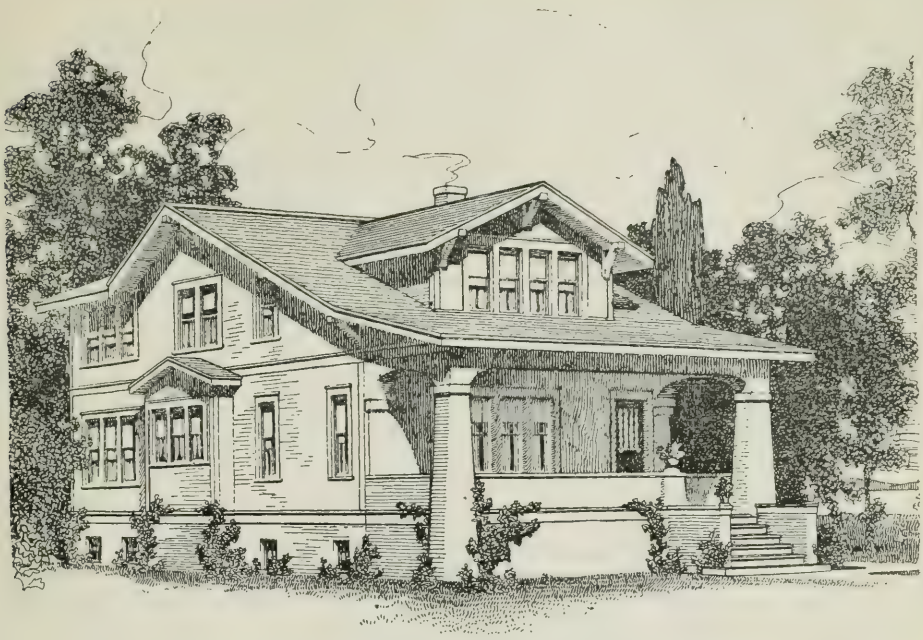
A hospitable, roomy Dutch Colonial type.



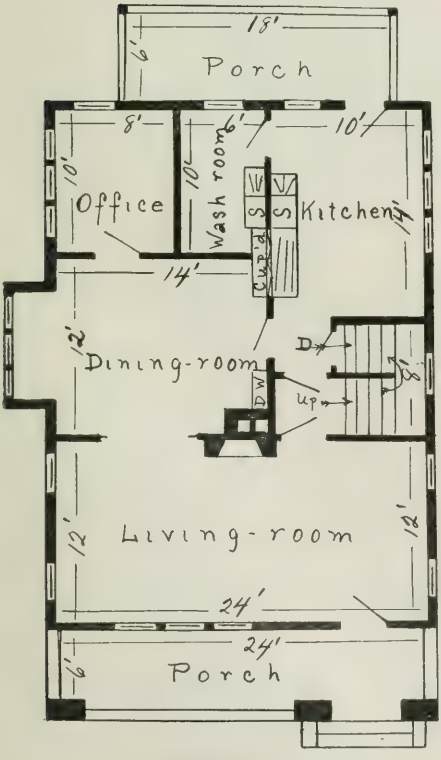

Ground floor.



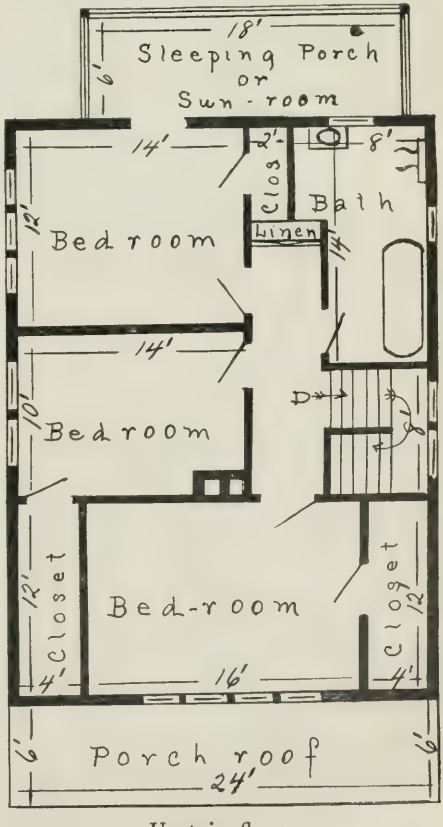

Upstairs floor.



An attractive semi-bungalow with economical arrangement of space inside.




Ground floor.




Upstairs floor.

washroom downstairs, and four bedrooms and a bathroom upstairs. Two extra bedrooms could be had in the attic if necessary. As in the first house, we have managed to get along with one stairs by having it turned from the usual way so that it is convenient to either the living room or the back rooms of the house; the little centre hallway with doors to the kitchen, office, washroom and stairway gives almost as much privacy as if we had a back stairs. The fireplace in the living room, the wide opening between the living room and the office and the long, roomy side porch go to make the house a cheerful, comfortable place to live in; there is no closed-up parlor shut off from the rest of the house—the rooms are placed where they will invite the family to use them.

For a large farm house the Dutch colonial type shown here is particularly good. The broad front with the wide porch and shuttered dormers above and the "hipped" roof sloping down to the first storey, give a low, substantial, earth-hugging appearance even while allowing room inside for two storeys and an attic. This is one of the most hospitable, comfortable looking homes to be found anywhere, either built in stucco, brick or frame. With a brick-red or earth-brown roof and shutters, cream stucco walls and set on a stretch of lawn among green trees it makes a picture to gladden the heart of any home-lover.

The old-fashioned, hospitable atmosphere is carried out in the interior arrangement. From the broad porch the front door opens directly into a large living room with a big corner fireplace, and deep bay window with a built-in window seat. A wide arch with sliding doors opens from here to the dining room, and back of the dining room is the office. Another of the old-time features still dear to many women is the spare bedroom downstairs. The stairway is particularly well placed to be convenient to this bedroom, the living room and the kitchen. In fact, having no main dividing hall in the house, makes the whole arrangement very compact. The kitchen opens directly to the office, dining room, washroom and porch with only a few steps to the living room.

Another very attractive and cosy farm home is shown in the fourth house. While this is suggestive of the bungalow type there is little waste of space on account of the low slope that usually goes with the bungalow roof. The front dormer, the grouped windows and deep porch with its solid corner columns give the air of a nest to what would otherwise be a plain, square house.

The interior arrangement as shown in the plans needs no explanation. One of the features to note is the sleeping porch over the back porch. A sleeping porch can usually be fitted up when an emergency requires, but the home which is provided with a place for outdoor sleeping—and where the children or a delicate member of the family are trained to sleep out of doors—will generally get ahead of the emergency.

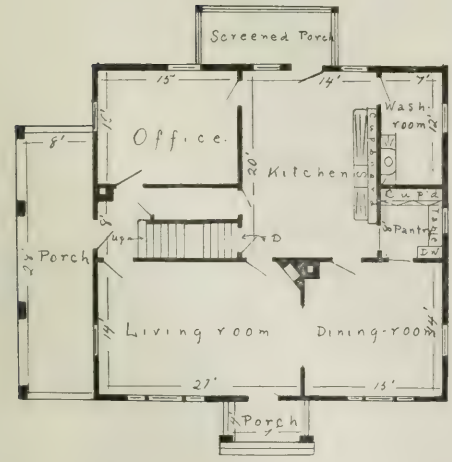
The two storey, square, cottage-roofed house will always be with us; after all it is one of the most practical types. It will fit any site or location and its substantial unpretentious style is in keeping with the truest ideals of a country home. The simplicity and dignity of the plain, square house, however, may easily run to a cold, uninviting austerity. It must be softened with some diversion from the regular hard lines. In this case the old-fashion entrance with its lattice work and peaked roof, the wide grouped windows, the low dormer in the roof, the low, square chimney and the broad side porch and balcony each give their distinctive touch of comfort and hominess.

The interior plan is convenient and arranged for most comfortable family life. The front door opens directly into the living room, a large room with ample window space and a corner fireplace; the main entrance, however, is the door from the side porch facing the drive, so it is here we have the stairway and the

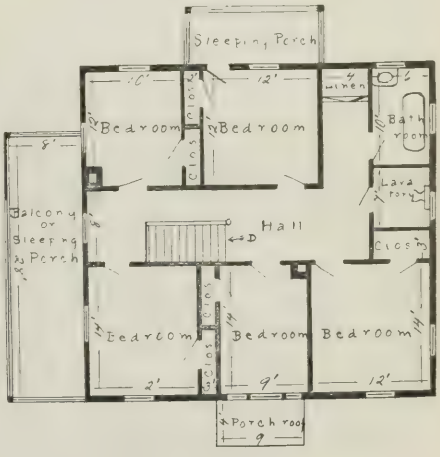
hall leading to living room, the office and the kitchen. This gives the whole stretch across the front of the house for the living room and dining room with sliding doors so they may be opened into one large room, and each opening directly to the kitchen—a most convenient, complete arrangement. The screened porch at the back is another blessing to the woman in the house, either as a cool place to take some of her work, or a fresh air nursery where a baby can sleep or play, protected from flies and within his mother's hearing but not in her way while she works. Other helps to the housekeeping are the washroom and the small pantry with its built-in cupboard, work table, dumbwaiter and swing doors to the kitchen and dining room.

Upstairs we have five good sized, airy bedrooms with a clothes room off each, a separate bathroom and lavatory, a screened sleeping porch and a balcony over the side porch; a side balcony makes an excellent place for airing bedding, but for a home with a large family a better use might be made of this by having it screened in for a second sleeping porch.

The square two-storey, is one of the most practical of farm houses.




Ground floor.



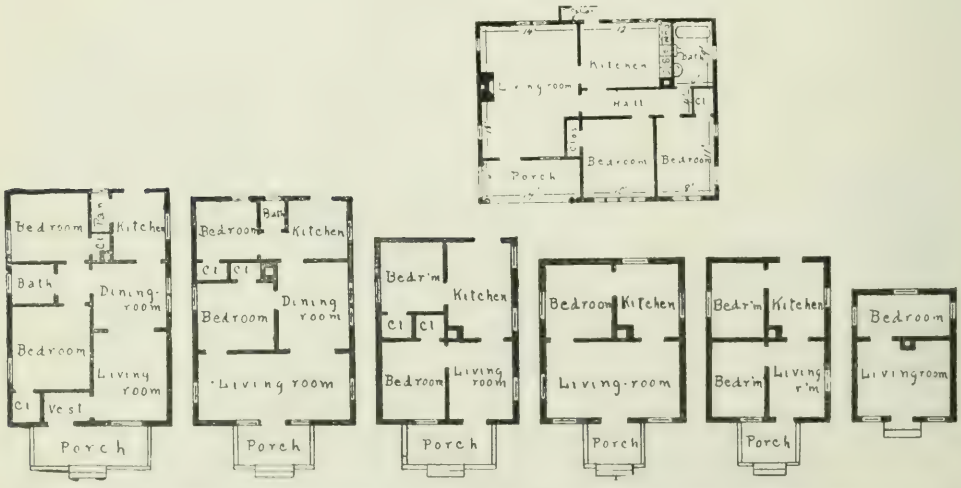

Upstairs floor.

## Little Farm Houses.

To the natural home lover there is always a special appeal about the little house—its snugness, its compactness, its unpretentious purpose of providing a home rather than setting up an establishment. And the little house has endless possibilities in the way of architectural beauty, especially if it be built in one storey and spread over enough ground to look firmly planted on its foundation, substantial and durable enough to withstand cold or windy weather.

There are no end of atrocities perpetrated against the little house in the name of the bungalow—creations that look like match boxes or bird houses or toy banks, with a shoulder jutting out here, and a dip in the roof there, and a dormer at one corner tucked under the chimney. These houses may "get by" fairly well while they are crowded in a row of houses on a city street, but when we set a house out in the open country with a few trees for side pillars and the fields and sky for a background, it should have character and meaning in every line. The house illustrated here carries out this ideal very well. The simple,

The little house has endless possibilities in the way of architectural beauty, if it be built in one story and given a rather broad front.




Floor plans for small houses, especially designed for hired men's houses or temporary homes.

unbroken roof lines, the broad front that gives a solid, earth-hugging appearance, the low, square chimneys, the sheltering porch and the quaint arrangement of casement windows make the place essentially a home, with all the comfort-making, livable qualities that the country home deserves.

The same atmosphere prevails in the interior. The front door opens hospitably into a good sized living room, with windows at each end and a fireplace at the side. There is also a casement window on either side of the fireplace. We can imagine this fireplace best as being made of brick and filled with a blazing, crackling wood fire, from the time the first dead branches fall in the autumn till the last knotty, hardwood block and pine roots are burned in the late spring. A hall runs through the centre of the house to separate the bedrooms from the living apartments, and at the back of this hall we have the kitchen. There is no dining room. A house of this size cannot reasonably accommodate one, and there is ample space for a dining table at the end of the living room.

No house is to small, however, to have a bathroom, and modern kitchen conveniences, in the way of sink and cupboards. The bathroom is placed where it will be possible to get a compact system of plumbing for it and the kitchen, and where it will have a convenient approach from the bedrooms. Care has also been taken to provide clothes closets for the bedrooms. Altogether this makes a pretty complete little home.

In the last group of drawings we have six plans for hired men's houses. These houses, will, of course, be simpler than the owner's permanent home, but they should be both attractive and comfortable. They are all arranged for one storey buildings and the drawings explain themselves.

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## HOW THE INSTITUTES MAY CO-OPERATE WITH THE AGRICULTURAL REPRESENTATIVE.

W. M. Croskery, Agricultural Representative, Kemptville.

My experiences with Women's Institutes have forced me to draw one conclusion, and that is that they are live organizations, not organizations existing in name only, and that they set out to and do accomplish a great variety of undertakings, all of them for the public good. In fact I think it is remarkable, and I know I am not alone in thinking so, the great variety of schemes which some Institutes undertake and carry through to successful conclusions. Knowing these facts, I felt that the opportunity of putting before you even in fifteen minutes some of my views on how the Women's Institute and agricultural representatives may work together in putting across certain lines of work was a real opportunity.

With reference to school fairs. I do not intend to spend more than a few minutes on this part of my subject because I think there are other lines of work in which your co-operation can accomplish greater results. I do not wish to convey the impression that I minimize our work with the children through the school fair. I believe it to be a very important and perhaps the farthest reaching line of work with which we have to do. But school fair work has been pushed vigorously since 1912 when it was first adopted generally. At that time twenty-five fairs were held in the province. This year 4,266 schools took part and 109,015 children received seeds and eggs through the department. It has been up to the agricultural representative service to keep pace with the rapid growth of school fairs and the result is that fairly efficient methods have been devised for handling them. This does not mean that there is no need for the

co-operation of the Women's Institute. There is one way by which the Institute could render a very valuable assistance, that is in the judging of the girls' work which consists of cooking and sewing.

Owing to the fact that the agricultural representative's activities are widening and increasing in number and the Government monies set aside for our work do not seem to be increasing in proportion, it is found necessary to safeguard our appropriation in every possible way. This Department of School Fair work is hardly large enough to warrant the supplying of special judges for all fairs in the province. You can see that to supply judges for fifty counties in Ontario and the paying of travelling expenses would run into a lot of money. It is therefore left to the representative to secure voluntary assistance for this work. This constitutes quite a problem in some localities. No doubt there are any number of ladies in most districts who are capable and willing to do this judging, the trick is to find them, and, having found them, to make sure that they are not in any way directly or indirectly interested in the fair, that is, through relations or friends taking part in the fair.

It would be a great help if the agricultural representative had assurance from the Women's Institutes in his county that their organization would see that two judges were supplied to each school fair in his county, no judges to do any judging in their own school fair district. It would, of course, be necessary for the judges to arrange their own transportation to and from the fairs, as the department will not sanction the payment of any accounts incurred for this work. I believe this scheme has been actually tried out in at least three counties in Ontario, i.e., Elgin, Brant and Lincoln, and is giving good satisfaction and helping out the fair materially.

There is another way in which the Women's Institutes might co-operate with the agricultural representative in school fair work, and that is in offering suggestions for the revision of the prize list. No doubt most of you are familiar with a school fair prize list. Roughly speaking, it consists of classes for live stock, poultry, grain and vegetables, flowers (these to be the product of seed sent out by the department) manual training, nature collections, sewing, cooking, writing and essays and art, and various contests, e.g., sewing contests. It is left to the representative to revise his prize lists each year so that the work asked of the children will not be the same year after year. If he had a list of suggestions from the Women's Institutes of his county I am satisfied that a great many useful and untried ideas could be worked out.

There is another very important field in which the Women's Institutes and the agricultural representative might well co-operate, i.e., rural home beautification. It has seemed to me for a long time, long before I began to work for the Department of Agriculture, that it was a great shame that such a large percentage of farm homes are so desolate and uninviting in appearance. It is true that one finds throughout the rural districts some beautiful, well cared for homes, with spacious lawns, with flowers, shrubs and trees, but after all they are a very small percentage. It seems a pity that so many people do not appreciate, and this applies in towns and villages as well as in farming districts, the money value, much less the aesthetic value, of a little judicious planting of trees and shrubs and flowers. Not so very long ago a retired farmer living in Kemptville informed me that he considered some planting of trees about his house and buildings and along the roadside netted him $1,000 more for his farm when he sold it some years afterwards than if the place had been bare of trees as it was when he got it.

I know of another case of a city man buying one of a pair of houses built

by a contractor on exactly the same plan, who, when he came to sell, realized $500 more than his neighbour who had no taste for flowers, etc., and whose house was left bare of planting. I give these instances simply to prove that judicious planting adds greatly to the selling value of a home, whether in town or country, as well as to the pleasure and pride to be derived by those who live in it. I believe a great deal of this seeming indifference to the value and beauty of suitable planting about the home to be due to a lack of knowledge of varieties of shrubs, vines, climbers and perennials which are likely to be suitable. I feel satisfied that if people generally knew that they could purchase, and knew where they could purchase, the best hardy flowering shrubs at 35 to 40 cents each, and climbers and perennials which make a better showing than annual stuff and once established require a minimum of attention, and also knew where they could obtain advice in the planning of their permanent planting, there would be a great awakening in the interest taken in home beautification, with resultant increased happiness and pride in the home, and fewer boys and girls awaiting the first opportunity to leave the farm.

You ask how can the Women's Institutes co-operate with the agricultural representative in improving these conditions. One way is by the organization of rural horticultural societies. A strictly rural or township society can be organized with twenty-five members at one dollar each. An incorporated village requires fifty members. Women's Institutes which already are so well known and have reputations for inaugurating new schemes for the public weal, can start things of this kind with more assurance of success than could the agricultural representative, even though he might have the time to put on work of this kind, which he has not; but I assure you that any representative would be only too glad to go out and help a new society get organized, if the preliminary work had already been done by a local organization such as a Women's Institute. He could also put your new organization in touch with sources of supply. Societies organized under the Horticultural Societies Act participate in an annual Government grant, which is based on the membership and the amount of money spent by the society for horticultural purposes. Moreover any horticultural society can get seeds, plants and bulbs for its members at wholesale prices. If you will pardon my making reference to the Kemptville Horticultural Society, I will endeavour to illustrate what I have been saying.

The Kemptville society is a good example, and a direct result of preliminary work done by the Kemptville Women's Institute; even yet the Kemptville Women's Institute makes an annual donation of $25 to the horticultural society. Our society I consider has done very creditably. Our membership compares very favourably with the membership of any society in a village of the same size. We spend well up to $500 annually on seeds, plants, bulbs and shrubs. We supply each member $1.00 worth at wholesale prices of nearly anything that is wanted, with the membership fee. Our Government grant this year was $120.

It should not be hard for you to see that if any society brings in planting material for its members in like proportion that there is bound to be a marked improvement in the knowledge of the members concerning flowers and shrubs which formerly they did not know very much about, and ultimately in the appearance of the homes.

There are many other ways in which Women's Institutes could co-operate with agricultural representatives in the furthering of worthy projects. Time will not permit of my going into too much detail. But it seems to me that Women's Institutes, perhaps not directly as organizations, but indirectly through its members, could have a very great influence on the attitude in the farm home toward a great many features of agricultural representative work.

I have in mind the short course, held annually during the winter months by the representatives in various parts of their respective counties, for young men and young women. These courses as a rule extend over a period one to three months, and comprise courses in agriculture for the boys, courses in nursing, sewing, or domestic science for the ladies. As I have already intimated, it seems to me that the local Women's Institutes in the localities in which these courses are held could have a great influence on the attitude and attendance, especially of young women, and indirectly on the young men. I know that this is the case already in a great many districts. Personally I have had splendid co-operation from Women's Institutes in different parts of my county when putting on work of this kind.

Then, in addition to short courses, considerable of a representative's work has to do with the conducting of competitions of various kinds; for instance, I have had during the past year: acre profit competitions, dairy profit competitions, feeding hogs for profit competitions, live stock judging competitions, plowing competitions, plowing matches and boys' and girls' club work.

One week ago to-day, a carload of hogs fed by a Grenville Boys' Pig Club was shipped to the Union Stock Yards, Toronto; was judged there in a carlot competition against carloads of hogs shipped in by other Boys' Clubs throughout Ontario, and when sold realized $12.25 per cwt., when the highest market price ruling that day was only $11, this simply because the whole carload was uniform and were select hogs.

I have not the slightest doubt but that Women's Institutes could have a marked influence on the interest taken and the number of members taking part in such features of our work.

It is very discouraging to a representative who is trying to stir up interest, especially in good lines of work, to find a feeling of apathy or indifference which so often exists in families.

There is no doubt in my mind that this feeling could be changed by the mothers who are Institute members. Where there may be a little indifference on the part of the father, a little encouragement by the mother to a boy would be all that is needed to start a great many in taking part in lines of work which come their way.

Someone might ask are these competitions and short courses, etc., worth while. I may say there is absolutely no question about it. I believe one can go into any of the older counties of Ontario, make the acquaintance of the young farmers between the ages of fifteen and thirty-five, and you will find that the outstanding progressive chaps are those who have had ambition enough in them to get out and take part in contests and competitions of various kinds where they could test their skill against that of boys from a different neighbourhood or township and get to see the other fellow's viewpoint.

I have endeavoured to cover a portion of the subject allotted to me within the time limit set. It is a subject which might easily be stretched out over a good many fifteen minute periods. However, as I have said, I have endeavoured to cover it in a hit and miss fashion at least.

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## THE INSTITUTE AND THE SCHOOL FAIR.

### I. F. Metcalfe, Agricultural Representative, Emo.

In opening the speaker referred to the very effective co-operation of the Women's Institutes in school fair work, and proceeded to say that it seemed to

him that the school fairs should be looked upon, not as our school fairs, but as your school fairs. You should not think that you are helping us with our school fairs, but rather, that we are helping you with your school fairs. The local people should actually manage the school fair, beginning with the annual meeting.

It should not be necessary for the representatives to attend the annual meetings at all, but the local people should turn out to see what finances have been raised during the year and how they have been expended, to see that efficient officers are elected and that a satisfactory prize list has been arranged. The place to have all these matters attended to is at the annual meeting, which many never attend. Then, the day of the school fair, it should only be necessary for us to judge the exhibits that have already been arranged.

Mr. Metcalfe also emphasized the importance of the home grown plots, and was very glad to be able to report that in the Rainy River District the local people have raised the necessary funds to provide for the judging of the plots.

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## THE INSTITUTES AND LIBRARY SERVICE.

W. O. Carson, Inspector of Public Libraries, Toronto.

Permit me to express our appreciation of the interest that the Women's Institutes have taken in our travelling libraries, and also for the splendid assistance that they have given to many of the rural and village libraries in the Province of Ontario.

We have something of interest to place before you in the matter of promoting library interests for boys and girls, and books for young people. We began a short time ago to put forth special efforts to stimulate a greater interest among our public libraries. In October all of the children's librarians of the province were brought together in conference. Recent books for boys and girls were discussed and also many phases of library work in the interest of young people. We expect to have librarians from the larger towns here for special instruction in children's work, and later, we shall have the librarians from the smaller towns.

A special pamphlet will be issued in the near future for rural and village libraries, and we would be very pleased if the members of your Institutes would do all in their power to stimulate an interest in the best literature for boys and girls, and in story telling to young children.

Miss Lillian Smith, B.A., of the Toronto Public Library, our chief authority on children's literature and story telling, is writing a pamphlet. It will treat on children's libraries, on children's literature in general, and on story telling. The work will also include the choicest lists of books for small children and for older boys and girls. All advice and recommendations will be in the interest of the smaller communities of the province.

We expect to issue sufficient copies to serve all of our libraries. If your members favour the idea of placing special emphasis on children's literature and story telling for the year 1923, I shall be pleased to recommend to the Minister of Education that a large edition of the pamphlet be published in order to serve the Women's Institutes. I need not ask you whether your members are interested. We know their interests too well to think for a moment that they would do other than seize the opportunity to assist in a province-wide campaign.

## BETTER MOVIES FOR RURAL DISTRICTS.

Mrs. Alex. Thompson, Fort Francis.

The whole country is clamouring for a general cleanup of the films, not only in rural districts but in cities, towns or wherever a motion picture theatre is operating.

We must ask ourselves, "Is the average film being shown to-day what it should be?" For these pictures are to-day influencing the minds of your children and mine; your neighbours and mine; and where the pictures are good the influence is good, where they are bad the influence is also bad. Do we need a movie cleanup and what are we doing about it? Nearly every magazine one picks up has articles along this line written by prominent men and women who are interested in the developing forces of our national life. Have we ever stopped to consider any of the developing forces of our national life? Let us look into a few facts and make a few comparisons.

One of these developing forces is the power of the press. The influence of the great presses that whirl in the night, to spread information and mould public opinion, is almost unthinkable. Another is the power of the school. Children gather daily to receive advice, knowledge, guidance and development. This is determining now what Canada will be when these children grow up. The power of the church, a tremendous influence for good in the lives of its members. The power of the government, which has so many vital questions of national importance to study and settle.

To-day we have the power of the screen. There are 22,353 newspapers published in United States and Canada. The aggregate circulation of these newspapers, morning and evening, is 31,000,000. The Sunday circulation is 15,000,000. In the United States alone in 1921 there were 17,824 moving picture theatres. Ten million people go daily to see pictures. As many hours each day are spent at the movies as are spent over all the newspapers.

The average attendance at schools is about 15,000,000. For three children attending school, two are watching pictures, and the schools stop in the summer while the movies go on.

For every hour spent in church three are spent in movies. This is in United States and Canada is not far behind when we consider the number of theatres we have and our population.

This temendous new factor in our civilization is acting daily on millions and millions of minds, the majority of them young and impressionable.

Through their influence on these minds motion pictures are affecting the character little by little of our entire citizens. Let young people (and the average age of motion picture patrons is under twenty) or older ones either, go time after time to motion pictures that show distorted ideas and ideals, that misrepresent life, where the taste and moral code and conduct of the individual portrayed are cheap and stupid, and you lower just so much the ideas, ideals and character of those watching reel after reel. A bad movie does more harm than a bad book. We receive impressions more readily through the eye, for a picture leaves one the imagination and memory an impression more vivid than any printed page can convey. Tennyson says, "Things seen are mightier than things heard."

The Rev. Byron Stauffer has said: "The power of the movie is beyond comprehension. There has been nothing in the history of our race that runs parallel with it, and the difficulty of discriminating between the good and bad in films

is complicated by the impossibility of knowing when to anticipate a bad play. The wholesome and unwholesome are so inextricably mixed, the show at the same theatre being sweet and pure one week and reekingly putrid the next. Moreover the advertisements give no certain clue. A salacious sounding title is often hitched to an unobjectionable play. On the other hand some standard stories of merit when appearing in a film are seen to be attended with most objectionable results."

The change for the better must come from some force, which will compel the movie people to observe the same rules which have been for generations imposed on publishers of books and pamphlets—laws forbidding the obscene in words and pictures. One of the safeguards against evil pictures is censorship, if we can get the right men. Let our Provincial Government find a man of intelligence and force, and give him the power necessary and set him to work to see that not a single objectionable play is licensed in our whole province. It is not only possible but necessary that it should be done. The first step is to bring our Government to realize that the character of entertainment given our young people is as important as the hydro system and timber limits.

One of the things we have to contend with in rural districts and small towns is having only one theatre to attend, while in the cities there are dozens, and if the picture is objectionable at one people may go where it is better, but in the small town we, as a rule, must take what we can get and although older people may stay away, it is hard to always persuade young people to do so. In conclusion, I would like to say: Let our Women's Institutes of this district do whatever is in our power to aid in this campaign for production of better films, and our reward will be in time better pictures for our children to see, not only in large city theatres but small town ones as well.

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## AN INFORMATION BUREAU.

Mrs. Jean Muldrew, Director of the Home Branch of the Soldier Settlers' Board, Ottawa.

What I have to present is not an original idea, though some of the features are adapted to suit our conditions. Every Government office has its files. These contain letters, documents, papers, and many other valuable bits of information which are essential to each particular department. Some of the branches have information bureaus concerning their own particular kind of work, and it was while in charge of a branch that it fell to my lot to gather and hold in form, easy of access, much information regarding household and farm activities. I then saw the value which this would be to any organization in a rural community, school, club, or Institute.

The collecting instinct is common to all boys and girls and to most men and women, but it depends upon the value of what is collected and the use to which it may be put. The botanist collects specimens, mounts them, and then may carefully put them away where they rarely see the light of day; or he may be fortunate enough to have a family who are also interested in his researches, when they all enjoy his successes and enrich their minds with the accumulated information which he has placed in permanent form. If the enthusiasm is general, it will spread to the friends of the family and the educational value increases daily.

The boy who collects birds' eggs can always manage to instruct a half-dozen other boys in his particular line of information, and every boy in the locality

will learn how to blow eggs and where to look for the nests of certain birds. Much knowledge of birds, their habitat and their habits is thus learned and passed on.

The boy who collects stamps will often be at the top of the class in geography, and a newspaper item, it may be of some event in Chili or in Italy, will recall a stamp of that particular country which he may at once take the trouble to look up. He has read of customs' stamps, or excise stamps, of stamps for legal documents, and these are all real things to him, to be studied in the encyclopedia if his father or mother cannot satisfactorily explain. Boys are more given to collecting than girls, which may account in part for the fact that a young boy may have a larger fund of general information than a girl of the same age.

The newspaper and the magazines are to-day great forces in moulding public opinion. They also present in excellent form the most recent and most valuable information. Who is there among us that has not been instructed by the head of the house not to lose that particular paper because there is an article in it to which he wished to refer again; and who, also, is there whose heart has not sunk when the paper was asked for because, though it had been carefully laid aside, some uninstructed or indifferent person had used it to wrap a pair of shoes to send to the repair shop.

There should be some place where information of value may be put away in some form that can be used for the benefit of those who may wish to profit by it. Of all the places in any community, the one where such information will do the most good is the school, and it is because of this that I would like to find in every rural school in Canada an information bureau.

As often as this has been mentioned, the old stock objections are raised. First it would be such a lot of work; what would it cost? How could you ever teach the teacher how to manage it? The answers to these objections may be made. Yes, it will be a lot of work by many people who will learn more things in a year than they ever dreamed of. The cost can be covered by one good concert or social, and it will be less if there's a man in the community who can build a plain cupboard with glass doors having a lock and key, just like a nice kitchen cupboard, with glass doors.

In reply to the third objection regarding the teacher's ability to learn, I may say it will take less time to learn than to teach a lesson in quadratics, and all teachers have to know many things more difficult than quadratics before they are allowed to teach the pupils in the public schools. A girl in the eighth grade with average intelligence can learn to manage the bureau but it does take time and it is time well spent. The explanation of the method may show how easy it is, and its value may be explained by the mode of use. Pamphlets, bulletins, magazine articles are placed in folders. Each article or pamphlet as it is placed in a folder is given a number and a card is made, called an "index card" containing a brief summary of the contents as follows:

Index Subject. File No.
Subject.
Source.
Contents.

At the top is the file number and the subject index, and below a record of the subject, the source with a summary of the contents. This is placed in the index cabinet where cards are filed alphabetically. The same pamphlet may have another card under another name, and may be filed under the author's name. This is called cross-indexing, and the same booklet may have three or

four cross-index file cards to assist in finding the information without loss of time. As an example, suppose we are filing away a bulletin on Pathescope films. These would be cross-indexed under such subject index headings as Pathescope, moving pictures, films, or cinema. If some organization in the community wants to buy one for winter entertainments, they may have a member call at the school and ask the teacher if she has any information concerning where moving picture films may be purchased, or it may be that she is asked if she has any information concerning Pathescopes. She will go at once to the card index and look up either "Pathescope" or "films" or "moving pictures." In any case the same information will be on the card which tells her it is in the box which holds No. 390. She unlocks the cupboard, takes out the pamphlet and loans it, writing out a "charge-out" card. This card tells that such book was loaned to Mrs. ..... on such a date. At the same time she places in No. 390, a red paper card about 3"x6" saying on such date 390 was loaned to Mrs. ..... This is all the work that is entailed on the teacher. The children in the school like the children in a reference library can be easily trained to hunt up their own information, take it to their desk and return it to the taecher's desk without any loss of time after reading. A senior pupil can replace these in their proper boxes.

If a woman in the community wants to know how to make a canning rack for her boiler in fruit canning time, she may tell her little boy to ask the teacher if there's any information in the bureau, and at night Teddy comes home with a bulletin on "Woodworking Problems," issued for boys' and girls' clubs by the Manitoba Government. This may set the man of the house making a rack holder to hold bags for filling grain bags without the need of a second man, for the instructions for the making of this are in the same book and of course all the family look over the book Teddy brings to his mother.

Well, one woman says, "It's all right to run a bureau, but where can the material be secured with which to fill the files?" That is where the educational value to the whole community comes in. If the school were mine, the first step would be to look over the senior pupils and choose one pupil for a subject and ask that pupil to take charge of the work of collecting material bearing on it. If a certain girl had particular difficulty in learning history, she would be asked to be on the outlook for anything which was of historical interest, and all the others would be asked to bring to her anything which they might come across on the same subject.

As agriculture is one important subject in the schools, it would be worth while to write to every Department of Agriculture in the various provinces asking for their bulletins. In this way there would be collected the most recent and best information regarding farm topics and from this source every home could draw for its needs. If a poultry house is to be built, there's all the information necessary in agricultural bulletins, and the important point is that this is accurate and is the result of years of experience. If a farmer wants to build a home or to remodel his old one there is abundant information which can be secured in bulletins from agricultural colleges in the United States, some of which would be supplied free and others at a cost of five cents.

The teachers would enlist the parents and all the community would become collectors of such information as would be of value in the years to come, history, geography, science, agriculture, homemaking, literature, art, civics, there is no end to the list once it has begun. Some may offer the objection that the libraries serve this purpose. They serve a good purpose, but not the purpose to which this may be used. The constant succession of new teachers may disturb the

management a little sometimes, but cannot really alter the usefulness once a bureau has become a reality.

Fifty boxes, 10½"x7½" of pasteboard, cloth covered, at a cost of 25 cents each, 1,000 folders 10"x6¾", two thousand cards 5"x3", and a locked cabinet of four drawers to hold them would be sufficient for one or two years. This would require twelve feet of shelf space about 10" or 11" between the shelves. and the cupboard would need glass doors and be fastened with lock and key, In addition to these, there should be a blank book with ruled pages to keep the order of the numbers of the files. This constitutes a very moderate supply of material for a very valuable means of assistance in affording a ready means of securing information.

It will make the whole district centralize in the school, provide access to information, for papers to be read at conventions and at monthly meetings, increase the interest in up-to-date farming and send out in the years to come men and women who as young girls and boys were eager collectors of information upon a wide range of topics of which the very work of collecting formed part of a liberal education.

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## WHAT THE INSTITUTES ARE DOING.

### School Improvement and Child Welfare.

*Dryden* Institute has a very active school committee. At the opening of the schools for the fall term the committee last year provided homes for the teachers until they could arrange for permanent boarding places. They also arranged a social evening to which all the parents of the school children were invited to meet the teachers and the teachers were welcomed by the school board, the ministers of the different churches, the mayor, the agricultural representative and the Women's Institute. The health committee of this Institute assisted with the rest room at the "Better Baby Contest" carried on in connection with the fall fair. This Institute gave a series of school teas to raise money to buy a piano for the school. They also have social evening gatherings to raise one hundred dollars for the hospital fund.

*Crozier* Institute last year took charge of the school fair, arranging the programme and donating a number of special prizes. They hold an annual community Christmas tree.

*Fort Frances* has a child welfare committee which did splendid work this year in financing demonstrations given by a public health nurse who was working in the district at the time. They have provided and equipped a rest room, given prizes to the school fair and sent donations to the Russian relief. This branch also has a hospital committee and has raised up to date over four hundred dollars to provide funds for a community hospital.

*Lavallee* this year held a children's clinic at which twenty-five children received medical treatment.

*South Neebing* in Thunder Bay has planted trees in the school grounds, bought a piano for the school and has made the school a real community centre.

*Charters* Institute is also doing active school work, assisting the teacher in every way possible.

*Stratton* Institute last winter supplied hot lunches for their Consolidated School from December 1st to March 31st. The hot dishes consisted of hot cocoa, meat and vegetables each day, the work being supervised by the older girls and providing practical lessons in domestic science as well as contributing

greatly to the health of the children. This Institute is improving the school grounds and helping needy families with food and clothing as the occasion arises.

*Hornpayne* is steadily working for the improvement of their school, having given donations to the school for various purposes. They have also contributed to the Russian relief.

*Quibell* Branch has supplied seats and flooring for the school and dishes which are used at all social gatherings held in the school.

*Barwick* Institute, since the Institute convention last year, has placed something over one hundred books in the library of their new consolidated school. They have undertaken to help the council to the extent of one hundred dollars as a bonus for a medical doctor for the district. They took over the management of the school fall fair, paying over one hundred dollars in prizes. They also paid thirty-five dollars for the inspection of the school plots. They are planning this winter to furnish hot lunches for the school children and will install a complete hot lunch equipment at an early date.

*Kentvale* has two school sections to help and has supplied cupboards for both schools to hold the necessary equipment for domestic science lessons. The Institute contributed fifty dollars to have a well dug at one school and are very proud of having struck flowing water. There are a number of men members in this branch, and with their travelling libraries and permanent library to which they keep adding, most of the people in the district are readers.

*The Olinda* Institute, in South Essex, organized only two years ago, has installed drinking fountains in their schools. They have been instrumental in getting a woman on the school board, and are planning to have a music teacher come regularly to teach music in the four schools in the section. They have organized classes for demonstration lecture courses in food values and cooking and home nursing.

*North River.*—Members of North River Institute make a special event of their annual "Babies' Day." Every member brings her baby or her youngest child, up to about six years old. Last year there were twenty-five at the party. The programme for the day is devoted to child welfare entirely—infant feeding, child training, school lunches, and other problems vital to the mothers of growing children. Games are arranged for the children, each baby is presented with a balloon and the older "run abouts" with a ball or some other inexpensive and satisfactory toy. The interest of such a gathering can easily be imagined. What it may lead to in a welfare or educational way may scarcely be estimated.

*Stratton* Institute bore the cost of a hot lunch for the children in their school last winter. A minor, but interesting feature of their work, was to give twelve pairs of stockings to six motherless children.

*Dryden* is working to bring the parents, teachers and pupils of the school together at a series of school evenings. They followed a study course on "Health and the Growing Child," put a piano in the school, had a demonstration lecture course in home nursing and are now working for a hospital.

*Fort William* bought baby scales and other equipment for their "Wayside House" so the doctor could hold baby clinics in the foreign settlement.

*Glenora*, in Prince Edward County, is interested in the two schools in the section covered by the Institute membership. They have a committee for each school section to visit the school each month and report how the Institute can help. They have furnished both schools with water tanks, basins and towels.

*North Horton* near Renfrew has established the hot lunch in three schools, assisted with the school fair and county fair.

*Westmeath* makes a specialty of helping with the school fair in which five

school sections take part. The Institute runs a booth and lunch counter, using the proceeds to pay for decorative material for school parades and other expenses in connection with the fair. They have an Institute member as trustee on one of the school boards, and in another section there are three Institute members on the advisory board. Throughout the year they have aimed to create a community spirit by getting in touch with the young people, creating a keener interest in the school and introducing community singing.

In a section near Lanark village there were many children on farms who had passed the entrance and were ready for high school, but who would never have had the opportunity of further education unless Lanark school opened a continuation class for them. This could not be done without an extra teacher and the school had no funds available this year. Quite naturally the trustees appealed to the Women's Institute for help and they responded with a few hundred dollars to help make up the additional teacher's salary.

*Tottenham* Institute, realizing that flies in the school were both a nuisance and a menace to the health of the pupils, had full size screens put on the windows. They also assisted in putting on baby clinics, mothers' meetings and school medical inspection when the public health nurse was demonstrating in the municipality.

*South Lanark* district is specializing in school work. They have a woman trustee on one school board and in two other sections the Women's Institute has elected a woman assistant to the trustees. Most of the Institutes have members appointed to visit the school regularly and they have done much to introduce the hot lunch, planned for wholesome play for the children and made the schoolroom more attractive.

*Winchester*, at the suggestion of the district nurse, has placed scales in the public school so that the children may be weighed periodically.

*Carleton Place* Institute presented the town with a service flag on which the women had embroidered the names of all the boys of the town who enlisted. This, in addition to presenting the school on Armistice Day with the pictures, "The Fathers of Confederation" and "The Death of Nelson."

The members are putting playground equipment for children in part of the Memorial Park, and give prizes to school children at the horticultural show and for essay writing at the school fair.

*Glencoe* Institute draws its members from two school sections. This year they put a complete equipment of water tank, towels and wash basins in each school.

*Fallbrook* has placed a sanitary water tank in the school and provides cocoa and sugar for the children's hot lunch.

*Winger* Institute has placed sanitary drinking fountains in all the schools in the district.

*Silver Water*, on Manitoulin Island, has presented the school with an oil stove and complete equipment for a hot lunch.

*Howland*, on Manitoulin Island, provides a hot lunch for the school children and supplied equipment for three schools.

*Green Bay* has redecorated the Union church; installed equipment to be used for watering flowers in the cemetery, decorated the public school and painted it outside. They state that they have not paid for any of the work done to the public school. The trustees' wives are three active Institute members, therefore, it seems quite easy to get the men to improve the schools. During the year they held a picnic and divided the proceeds with the baseball team to help them buy their baseball equipment. They have also contributed generously to local and outside causes.

*Harrietsville* held a very successful baby clinic.

*Salem* Institute arranged a whole community meeting at one of the schools in the district. They had the floors oiled in their two public schools. A Valentine social was held to raise money for the Union Sunday School. The Institutes of Salem, Dorchester and Harrietsville combined to give a banner as a prize for the best parade at the school fair. The banner to be held by the school winning it three years in succession. This Institute has made quilts for fire sufferers and for needy families in their own community.

*Maple Leaf* Branch, in North Essex, visits the school regularly and has spent some money in improving the school building.

*Maidstone* invited all the women of the community to a special meeting at the school one afternoon, the children furnishing the programme and the Institute providing the refreshments. They gave a donation to the U.F.W.O. towards furnishing a rest room in Essex. This Institute bought eighty yards of cotton which they are making up into hospital supplies. They have specialized in community singing and writings from Canadian authors at their regular meetings.

*Wiarton* has improved the sanitary conditions in both the public and high schools and has erected bath houses on the bathing beach.

*Lion's Head*, in the Bruce peninsula, has supplied the public and continuation schools with covered water tanks and paper towels. The Institute worked hard to promote the development of a power plant, so that now the streets and many of the homes are lighted with electricity.

*Spry* has supplied the school with wash basins and paper towels.

*Luton* is steadily assisting the school. The Institute visited the school on Empire Day and presented it with a Union Jack and a Canadian flag. They are also contributing a bronze shield to the school winning the highest number of points at the school fair for three years in succession. They have established hot lunch, and on Hallowe'en they gave a masquerade party at the school, giving prizes and provided games and lunch.

*Kingsmill and Mapleton* are contributing generously to the three schools in the Institute area, the money to be spent in buying games, playground equipment and flower bulbs.

*Kirkton* is responsible for having music taught in the school.

*Tavistock* assisted the school teachers in paying for a victrola and lantern; assisted the school teachers with a garden party to purchase playground equipment. They have placed a memorial tablet in the public library and sent seven hundred dollars' worth of goods to the northern fire relief.

*Malden* gives prizes for regular attendance at the rural schools in their township.

*Essex* has been raising funds to equip a new high school, since the old one was burned.

*Dorchester* has had the floors in the public and continuation schools oiled so that the children might be saved inhaling the dust constantly stirred up from the average unoiled school floor.

*Matheson* is providing hot lunches for their schools.

*Copetown* Institute assisted in the organization of a continuation school which is being carried on in the basement of the Methodist church. The permanent school building will be under construction within a period of three years.

### Community Halls and Recreation.

*Oxford* Branch in Kenora is reported "to be so busy doing whatever is needed in the community that the members are entirely too busy to have any little

squabbles," and "that they have thus the respect and co-operation of the men." In their enterprise to build a community hall, so strong was the faith of the community in its Women's Institute, that nearly all the labour was given gratis and the material given at cost. This Institute provides generously for school fair prizes.

*Beaver* Branch (Rainy River) fitted up a playhouse or gymnasium for the children in an old armouries building. They applied for a demonstration of public health nursing service, which was put on this year. They have helped their town band, and are raising money to build a community hall. This Institute is really the Rainy River Institute, but they have taken the name "Beaver Branch," as they say "the tendencies of that animal are to work and work all the time." Their other motto is, "Freely ye have received, freely give."

*Shenstone* is working to raise money for a Community Hall.

*Hymers* is concentrating on community hall work.

*Washago* Institute reports that their greatest accomplishment this year is their "Common work, common church work, common school and common village work, everyone working for everyone else." The members have established a tennis court for the young people of the community, and a sewing class for the younger girls. Last spring they advocated a "Clean-up" week, advertised it in the local papers, and to initiate the campaign they painted the post office. Another thing that claimed their attention was a ditch in front of a church, breeding hordes of mosquitoes which greatly disturbed the church service. They petitioned the council to drain the ditch, also to finish some sidewalks which had been begun seven years ago. Both these have been done. There was a great deal of sickness in the neighbourhood last year, and the Institute started a flower fund to send flowers to the sick in the whole community.

In the *Miscampbell* Branch, although the members are handicapped on account of long distances and bad roads, they are enthusiastically working for community betterment. Their annual Christmas Tree for the children of the neighbourhood is a big community event.

*Kemptville* has given donations to the local Horticultural Society and to the erection of a Memorial for fallen soldiers. This Institute devotes considerable attention to providing community entertainments and social gatherings.

*Maynard* has opened a women's rest room in the town of Prescott: the Prescott council providing a suitable room in the town hall, free of rent, with light and water supply. A committee from the Institute canvassed the merchants and prominent citizens of the town for funds to furnish the room and received a generous response. The Institute has engaged a matron to be in charge of the room, and are endeavouring to make every woman coming into the town feel at home in these quarters. The rest room is being well patronized and much appreciated.

*North Gower* Institute is proud of their membership of seventy, practically all of whom attend the meetings regularly. This Institute has held a number of concerts during the year, the programme being given entirely by local talent. This has proved to be a valuable education for the young people. A visiting committee is appointed each month to visit the aged, the sick, and new residents to the community. They have assisted the public library and have purchased goods from the Institute for the blind. They have cleaned and beautified their cemetery, and are now working to renovate their town hall into an up-to-date hall.

*Farran's Point* is especially interested in a memorial park. They leased the land from the Government, and up to date have spent over $100 in erecting a

pavilion, kitchen and rest-room, and in buying seats. During the summer, dances were held in this park. No fee was charged. The secretary reports "the dances were always under the supervision of one or more of the Institute mothers; in fact, most of the mothers came with their children." Through local papers they have extended an invitation to any picnic parties in the district to make use of this park at any time. This Institute sends donations to the Cornwall General Hospital, and after the Northern Ontario fire the members met every day for a week to sew for the fire sufferers.

*Tottenham* is renovating an old hall into a complete community hall, with auditorium, banquet hall and gynasium. At a skating party and carnival they raised $40 toward erecting a town bandstand. This Institute is also responsible for organizing a Horticultural Society in the town.

*McIrvine* supplied a piano and other equipment for the community hall. With a membership of twelve, they have raised over $500 during the year.

*Lindsay* very successfully carried out the enterprise of a women's rest room at their Fall Fair.

*Comber*, an Institute of rather small membership, has purchased its own moving picture machine, and is showing pictures one evening every week, charging a small fee to raise funds to meet the instalment payments.

*Lakeview* has contributed very generously to local and outside causes. They have donated $200 to the Cottage Hospital in Pembroke, and $25 to local need, assisted to beautify the memorial hall grounds, gave a $10 prize to the pupil taking the highest marks at the entrance examination. $10 to the Public Library. Sent ten bales of clothing to Northern Ontario Fire Sufferers, the express charges on these amounting to over $20. Also made six quilts to be sent to the fire relief committee.

*Zone Centre*, organized only last February, is arranging for a Community Athletic Field.

*Gordon Institute* on Manitoulin Island, with a membership of ten, has finished building a memorial to their fallen soldiers.

*Gamebridge*, *Mount Pleasant*, and several other Institutes are expressing their interest in sports for the young people by making suits for their baseball teams.

*Rosseau* Branch, organized only two years, raised $700 towards a Memorial Community Hall. Most of this money was raised by a series of teas and entertainments. This Institute was instrumental in having the cemetery cleaned up and in having benches put in their picnic grounds. This Institute also sent a quantity of clothing and bedding for fire relief. This delegate says, "We are hoping to have a school fair next year, and will work for that. Our members are very active and we want to be a real community help."

In the *Calvin* Branch the members come five and six miles to attend the meetings which are held in the homes. Their programmes are particularly good, and have done much to develop local talent. They gave their support to a play put on by the young people.

*Brooklin* has decorated the village hall, and furnished the kitchen. *Whitevale* has furnished a hall throughout, including a piano.

*Willoughby* contributed $100 to assist the council in redecorating the community hall.

*Fallbrook* has bought an old church, converted it into a community hall, and supplied it with a piano.

*Howland* on Manitoulin Island, was badly in need of a community hall, so the Institute bought an old cheese factory and renovated it, furnishing an organ and kitchen equipment.

*Chesley* has this year paid $1,000 into their War Memorial Fund, the money being raised by "A Fair of Good Neighbours," and concerts by local talent, a Soldiers' Re-union, and a number of tag days. This Institute makes use of local specialists in planning its programmes. They had an address from the local lawyer on "Women and the Vote," and an address on physical culture from the High School teacher of this subject. They have taken advantage of the Demonstration Lecture Courses, and have been generous in their donations for local and outside relief.

*Forestville* last year completed the building of a community hall, and this year they equipped the kitchen. Last winter they conducted a series of community social evenings, inviting every family within the Institute area.

*Jackson's Corners* had a series of debates with the Young Men's Club. They held a membership contest this year, securing twenty-six new members. They have also bought a piano for the community hall.

*Maxville* has brought the Chautauqua to their community for the last two years, and the secretary says "They find that it makes an excellent help in a hard-working agricultural community." They gave $25 for school fair prizes this year.

*Moosecreek's* main project this year has been to interest the township council in building a community hall. The building will commence in the spring. The Institute was instrumental in arranging to have a Sunday night train stop at their station so that students might spend the week-end at home. The secretary says "this piece of work was undertaken by the men of our community without success. We were engaged in it for nearly a year, but we were successful." They have had weeds cleared from the roadsides and have doubled their membership during the year.

*Ridgetown* is aiming to buy a clock for the town. Ridgetown and Thamesville have both well equipped rest rooms, due to the efforts of the Institutes.

*St. Paul's* painted the hall where their meetings are held. Bought a piano, linoleum for the platform and kitchen equipment. They also contributed $25 for school fair prizes.

*Leamington* donated $400 to the W.C.T.U. toward building a rest room.

*Acton* Institute in 1921 installed a drinking fountain on the government grounds at the Post Office. In 1922 they added a horse trough at a cost of over $100. They sent a bale of clothing valued at $450 to the fire sufferers of Northern Ontario, are contributing to the support of two French war orphans, and have assisted their town band.

*St. Marys* furnished a kitchenette with electric stove and dishes to be used for the Institutes social gatherings. They have contributed generously to fire sufferers and other relief work.

*Kincardine* has furnished a rest room in the lower flat of their public library.

*Tobermory* in the Bruce Peninsula, fifty miles from a railway, has raised sufficient funds to purchase street lamps.

*Carterton* has cleaned the town hall and bought a piano for it.

*Little Current* has contributed to their memorial fund and school fair, and has placed tables and benches in their picnic grounds, and built dressing rooms at the bathing beach.

*Dunchurch* has spend something over $60 in repairs for their community hall.

*Spry* in Bruce peninsula has secured a ninety-nine year lease of the Orange Hall which they have rebuilt so as to make a comfortable community gathering place.

*Westmeath* has about $500 raised toward the erection of a community hall.

### Libraries

*Severn* Institute has established a public library, the only one in the community. A travelling library, is kept in use all the time to supplement this and the boys' department is being made particularly strong. The Institute organized a boys' baseball team, getting a man who is a good boys' leader to supervise the games.

*Marksville* in East Manitoulin took over a closed library, bought new books until they have now about one thousand, and pay a librarian to look after the distribution of books two nights a week.

Fifteen months ago the Women's Institute at *Markham* went about interesting the townspeople in a library, with the result that an association library was established. Last year the Institute gave $800 toward renovating an old brick cottage into a most attractive library building with an assembly room for meetings and two reading rooms. They also gave a grant towards buying new books and bought in two travelling libraries. Their latest enterprise is to begin a "story hour" in the library for the children of the community on Saturday afternoons. To encourage literary interest and talent in their own young people, three members of the Institute have offered prizes to the public school children for the best essay on a subject to be set by the school teacher.

*Hillsburg* aided to the extent of $250 in starting a public library.

*Kent Bridge* is establishing a library.

*Woodslea* has opened a public library, raising their own money for the first instalment of books.

*Morewood* has an Institute library maintained wholly by the Institute in co-operation with the community. A large per cent. of the funds are raised by plays given by the young people. This Institute is trying to get the co-operation of the community to beautify cemeteries and to build a vault.

*Ripley* Institute has reopened and donated funds to the public library. The members are using their influence to secure new instructors and are planning for their programme features that will encourage a love of good literature.

*Harrow* is working for a library fund.

Tiverton is steadily raising funds to pay for a library building which they bought and presented to the library board.

*Alliston* Institute established one of the best libraries in the province as a memorial to their soldiers.

*Pickering* reports: Our village has a public library which does good work, but occasionally feels a shortage of funds for buying books, so we gave them a donation of $30.

### Caring for Cemeteries

*Williamsburg* has taken the beautification of the cemetery as their objective for this year and have held a number of bazaars to raise funds and a number of community bees to do some particular work on the grounds.

*South Augusta* has done valuable work in improving their cemetery. In the early spring they sent out circulars to the plot owners asking each to contribute $2. These contributions were used to hire a caretaker and to buy such essentials as grass seed, cement and a lawnmower. This Institute contributed generously to local and foreign relief work.

*Cottam* receives funds from the township council to spend in caring for the cemetery, Institute supervising the work.

*Woodslee* in planning for cemetery improvement appointed a committee of three men of the village to look after the work. The Institute secretary writes to all plot owners, asking for donations and a caretaker is hired to do the work. In addition to this the Institute has given a series of entertainments from which they have raised money to have the grounds tile-drained and levelled. They are planning to erect a new fence and gate.

*New Liskeard* made arrangements to have a water supply for the watering of flowers in the cemetery.

*Bayham* Institute takes care of the cemetery and holds a decoration day, especially remembering their memorial plot. This Institute holds a social evening at some member's home once a month during the winter.

*The Bothwell* Institute takes sole charge of the local cemetery work.

*Thorndale* undertook as their special work this year the cleaning and beautifying of the four cemeteries in the township. Before beginning work they had an oyster supper to raise funds. This Institute has also given a grant to the public library.

*Providence Bay* is doing valuable work in beautifying their cemetery.

*Whitelake's* special work this year has been cleaning the cemetery and holding decoration service, taking care of the needy poor in the locality.

*Maynard* has hired a caretaker for the cemetery, and in various other ways is working to have the cemetery improved and beautified.

## Neighbouring at Home and Abroad

Some of the biggest things in the work of the Women's Institutes are the unseen acts of neighbourliness, not locally reported. The women at *Gamebridge* are very proud of a little girl in their neighbourhood, blinded by measles, whom they have had the privilege of sending to the School for the Blind. Unusually clever, and with the advantage of this training at an early age, the influence of this child in the years ahead promises to repay an hundredfold the cost of the investment. The local relief work of the Institutes in various sections is one of their important features of community building.

*Pinewood* has donated money toward the school fair prizes and to the Muskoka Free Hospital for Consumptives. They are interested in their young people and make a practice of entertaining the girls' club, at least once a year.

*Keewatin* concentrates on helping needy families in the neighbourhood, spending nearly $500 in this work last winter.

*Chapple* Institute, though small in numbers is doing very active work. Last year they gave a "household" shower for a member who had been burned out. They have brought a travelling library to the community. They contributed to the local school fair and Russian Famine Fund.

*McIrvine* helped to equip the home of a family who had been burned out.

*Beaver Branch* has done local relief work in the way of helping a poor family to pay their doctor bills.

When a local need arose for clothes for a family of children the *Tottenham* Institute organized a sewing circle to make the needed garments.

*Marksville* branch in East Manitoulin last winter made several quilts for poor families.

*Stoney Creek* made over old clothing to the value of $189 for relief work in the county last winter.

*Paisley Block* held a bazaar with fancy work and home baking and raised money to buy coal for a poor family last winter.

*Earlton* Institute is getting the non-English speaking women of the neighbourhood into the Institute, thus creating a fine community spirit.

*Hearst* is doing an important piece of community work in making and keeping on hand a complete layette to be used wherever it is needed at the arrival of a baby in a poor home.

*Feronia* by giving a series of "Pie Socials" and "Ten Cent Teas" has been able to raise money to give donations to their community hall, school children's Christmas Tree and Russian Famine Fund, Children's Shelter, and a supply of bedlinen for community use in case of illness.

*Maple Leaf* branch in North Essex makes a practice of helping busy mothers with their sewing.

*Harrietsville* makes a practice of sending Christmas cheer parcels to shut-in members of the community.

*Belmont* has done a variety of relief work, contributing to the Russian Famine Fund and needy families at home, Sick Children's Hospital in London, Northern Fire Sufferers, and the patients at Byron Sanitarium.

*Tehkummah-Sandfield:* This Institute, during the past year, has assisted the Sunday school with small donations, given aid to some of the poorer families, especially those with young children, and sent donations to the Children's Shelter. They have also been raising money to improve the cemetery.

*Magnetawan* specializes in local relief work. They held an "At Home" to raise money for the blind soldiers and had a tag day to help the Children's Aid Society.

*Midlothian* has contributed to the Children's Aid Society and Queen Mary Hospital.

*Emsdale* has improved the cemetery, and also made it possible for a woman in the community who was ill to have treatment in the Toronto Hospital.

*McMurrick* has helped the needy in their community by donations, quilts and clothing.

*Kearney* Institute this year has helped to re-establish two homes that had been destroyed by fire, to care for a sick child, and to keep on hand an emergency outfit of sheets, pillow cases and a layette.

*South River* is doing good work along the same lines as Kearney Institute.

*Lamont* has made a reputation for piecing quilts, donating them where they are needed.

*Sundridge*: This Institute has donated a considerable quantity of clothing, canned fruit, etc., to needy families in the neighbourhood. They also contributed to the Russian Fund, provided an emergency kit for a doctor, helped to care for the cemetery, and gave their hall to be used for the young people's club and other entertainments.

*Hilton Beach* has been particularly active in community relief work. They gather clothes from those who can spare them, then have a sewing bee for several days to repair and make the clothes over. Last winter, hearing of a woman who was ill and had very little bedding in the house, the Institute members got together and made a wool comforter and several "Tie Down" quilts.

*Burk's Falls* has helped the Russian Famine Fund and the Children's Aid Society. This Institute makes a day of visiting the school regularly and assisting in any way they can.

*Richard's Landing* gather the women of the community together and sew for a poor family of small children. They also made children's garments and five quilts for the Children's Shelter.

*Kentvale* has made stockings and undergarments for the children in the

Shelter, helped the poor in their own community and put cupboards for hot lunch supplies into their two public schools.

*Lyons* in East Elgin donated goods for Northern Fire Relief to the amount of $800.

*Aylmer* has been doing valuable relief work in sewing for needy families in the community.

*Woodslee* had a course in Home Nursing this year which was the means of enrolling twenty new members. They gave generous donations to hospitals and fire relief.

*Bluevale* has a committee to visit the sick of the community and a regular sum of money is set apart for buying flowers.

*Malden* has a committee appointed to visit a sick and destitute family every week, to find out their needs and to see that they are supplied.

*Sebyringville* purchased a bale of factory cotton and made it into surgical shirts for the hospital. They collected money for street light for the village, sent a donation to the Russian Relief and a bale of clothing to the home branch of the Soldier Settlement Board.

The Institutes of Centre Bruce District have sent $2,500 in cash and clothing to the Northern Fire sufferers.

*Hyde Park* makes a special feature of demonstrations at their regular meetings. They have had demonstrations in fruit canning, jelly making, and tea biscuits, and a display of Christmas presents, of work from the Handycraft Guild at Montreal, and a demonstration of aluminum ware. This Institute has a Soldiers' Comfort Fund and committee appointed to take treats regularly to the Hyde Park Institute ward at Byron Sanitarium. On Thanksviving Day they had a pumpkin pie shower for the whole hospital. They have contributed to the Armenian and Russian Relief, and are knitting for the Dr. Grenfell Mission. Their July meeting took the form of a quilting bee. The quilts were sent to needy people in Northern Ontario.

*Pickering* reports: "During the slack time for work in the winter, we found there were seven families in the village in need of food, fuel and clothing. These we assisted. Five of the men in these families were returned men. We sent one mother to a hospital for confinement, and took care of the husband until her return, and were instrumental in getting the three children, who were destitute, under the care of the Soldier's Relief. Later, we helped the sufferers in the fire calamity by sending five large boxes of clothing, including seven new quilts."

*Hoath Head* presented a surgical waggon to the Marine Hospital at Owen Sound.

*South Yarmouth* Institute is making quilts for needy families.

*Mosa or Glencoe* at Christmas time remembers all the old and shut-in members of the community by sending each a half pound of after-dinner mints. They also send candy, linen and bedding to the Children's Shelter.

*Huntsville* has been doing splendid relief work, particularly for the fire sufferers in Northern Ontario. They have also contributed to the Children's Shelter.

*Tavistock* sent $700 worth of goods to the Northern Fire sufferers.

### Miscellaneous Projects.

#### *Girls' Sewing and Story Class.*

*Severn* Institute, among its several progressive community ventures, has organized a "sewing class and story hour" for girls from six to sixteen. The girls meet once a week and sew for an hour under the guidance of the Institute

president, making garments for the county Children's Shelter. After the sewing they have a "Story," which is really more in the nature of a book review, aimed to set the girls reading worth while literature for themselves. It requires some tact and careful planning to arrange a programme of interest to girls of such widely varying ages, but the women at Severn have demonstrated that it can be done.

*A Stork Shower.*

The Women's Institute at Barnhart, in Rainy River, is noted for progressive work along many lines. Each member takes part in the programme some time during the year. The girls of the Institute prepare and serve the lunch at the annual meeting. In October the meeting is held in the hall, when the children of the neighbourhood have a fair after the nature of a school fair. If a member of the Institute is ill and cannot attend a meeting, the secretary visits her and gives her the news of the meeting. Four families whose homes were burned last year were helped by the Institute, but what seems the most original feature of their work, as reported by a visiting lecturer was "to give a shower of useful little garments to any member visited by the stork."

*A Versatile Programme.*

One delightful thing about a Women's Institute is its amazing facility for adapting its services to the needs of the community, however wide a field these needs may cover. For example, the Institute at *Englehart*, among their enterprises of last year, held a stumping bee to clear the cemetery of brush and to plant every grave with flowers—they invited their men to this of course, and served a community dinner and supper to make it a more sociable affair. They took care of twin babies who had been left motherless, and later found a good home for them. They were the means of sending a sick man of the neighbourhood to the Cochrane hospital. When the Duke and Duchess of Devonshire passed through on their tour of Northern Ontario they tendered them a formal reception.

*Teach Men To Make Their Wills.*

A rural Institute near the Soo hit on rather an original idea this year in bringing their men to a meeting and having a lawyer there to address them on the question of making their wills. It may have occurred to some of the men as a rather sombre idea, but the president says: "We had seen too many widows left with a family of little children to bring up and no means of providing for them while they were little and needed it, because there had been no will and the farm could not be sold until the youngest child was of age."

*How One Place Gets a Cemetery Board.*

The standing which the Women's Institute has in the community is evidenced over and over again by the way they are asked for representatives on school boards, community hall committees, and other bodies that deal with the whole community life. We have an interesting example of this in the way the *Base Line* neighbourhood in Algoma gets a permanent cemetery board. The personal of this is to consist of the Reeve of the township, the Anglican minister because the rectory is close to the cemetery, and the president of the Women's Institute, whoever she is.

*Walked Five Miles to Nursing Course.*

When the Demonstration-Lecture course in Home Nursing was put on at *Markdale* in Grey County this winter, one woman of about sixty years of age walked five miles to the class and five miles back every day for the two weeks of the course, did her own work at the same time and did not miss a lesson.

*Special Feature Programme.*

One of the interesting features of the *Whitby* Institute's year's programme is their annual Christmas treat to the County House of Refuge. They arrange a programme of community singing, music, readings and even dancing, and they have a Christmas tree with a gift for each of old people. Their January meeting was held in the school with a social gathering afterwards to give the parents an opportunity of meeting the teachers. At this meeting a doctor gave an address on "The Care of the Child." It is a standard practice of this Institute to have a "Grandmothers' Meeting" in February, at which they sing the old songs, and have readings and addresses by the grandmothers.

The *Whitby* Institute is active in fair work. Every year they have an exhibit of canned fruits and vegetables and handmade articles at the South Ontario exhibition and last year the local winter fair board asked them to take charge of the women's work for their exhibition, which they did with most creditable results.

*Active Work at Mt. Albert.*

The *Mt. Albert* Women's Institute has had an interesting year in both special programme features, and community work.

One meeting during the year was devoted entirely to farm interests, the county agricultural representative giving a demonstration in milk testing. In September, the Institute entertained the grandmothers of the community, the programme being given largely to the early history of the village and community. Each attendant paid a fee of a cent for each inch of her waist measure, the money going toward the Institute's fund to support a cot in the Queen Mary Hospital. In October they had a Hallowe'en fair to raise funds for the public library. The girls of the Institute always take charge of one meeting, and the women give prizes for home-made candy. Community singing was introduced at an Institute concert last winter and has been a feature of every programme since. At the annual banquet, to which the men of the community are invited, the local orchestra accompanies the singing. Last year they had a debate following the banquet, "Resolved that women have done more than men for our community." The women won the debate.

This Institute has also been active in community work and in relief work outside the community. They are caring for a neglected old cemetery, and have planted flowers in their new cemetery. They revived a neglected public library and are each year contributing to its improvement. They presented the village school with a first aid kit, gave a donation to the community skating rink, and bought a piano, which is used at practically all the community entertainments. In addition to this, they are helping to support the North York Women's Institute cot in the Queen Mary Hospital for consumptive children, they supported two French orphans last year, sent a box of canned fruit and jelly to Pearson Hall for blind soldiers, held a shower for the county Children's Shelter, and sent a donation to the Russian Famine Fund.

*Training for School Fair Sewing.*

The *Pickering* Institute, realizing that the school girls needed training in sewing if they were to make a success of their work for the school fair, organized a sewing class for the girls of the schools in the township. One member was appointed to take charge of the class with seven volunteer assistants. They have a class of fifty girls meeting every Saturday. The Sewing Manual issued by the Department of Education is used as a text-book.

*Del ware* has made a specialty of distributing throughout the community,

the Government bulletins from the Department of Health and Department of Agriculture. They have purchased a number of books for the use of Institute members, "Care and Feeding of Children," by Dr. Holt; "Canadian Laws for Women and Children," by Mrs. Lang; "Manual for Women's Meetings," by Mrs. Parson.

*Labour Savers and Home Beautification.*

*Kerrwood's* secretary reports: "The Institute is helping us out of ruts by showing us how to use labour saving appliances in the home and thus give us more time for real homemaking and to cultivate our minds, thus raising the standards of our community life. Several of our papers for the year were along the line of home life. The best amusements for the children and the best literature to interest young minds so that they may grow up with a love for reading. Also the effect of music on the child. The crying need of our day is better home life—no outside influence can ever equal the good foundation given by example and teaching in the home. We also tried to interest our members in beautifying their home surroundings with flowers, especially perennials." This Institute has helped with school fairs, local hospital, and are working for a community hall and playground. They have found the travelling libraries, government bulletins, and demonstration-lecture courses very valuable.

*Warwick* had a demonstration in poultry culling by the Agricultural Representative. This Institute makes a speciality of social gatherings in the winter at which they have had spelling matches, debates, and mock parliaments.

*Florence* has distributed Government bulletins throughout the homes of the community as well as to the Institute members. They have found that plays given by local talent can be made to raise a considerable amount of money for philanthropic causes.

*Aughrim* is interesting the girls of the community by holding contests in cake-making, etc. This Institute also had a poultry culling demonstration.

The *Maple Leaf* Institute at Atwood, North Perth, has chosen for one of its roll calls, "My favourite name for a baby."

*Burgoyne* selects its directors so as to have one on each local telephone line. This year they appointed young girls for the programme committee.

*Morewood* Institute reserves one meeting each year for an "Exhibition of Girls' Work."

*Falkland* Institute issued a cook book, and from 1,000 copies sold cleared $400.

*Riverside* sent two of its girl members to the Rural Leaders' Conference at the Ontario Agricultural College.

*Hurondale* imposes a fine of five cents on any member who bakes bread on "Institute Day" and is thereby prevented from attending the meeting.

*Clay Bank:* Among the practical demonstrations put on this year was an exhibit of aprons, and a response to the question, "What can be made out of flour sacks?"

*Kent Bridge* made over $700 through concerts and plays last year.

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## REPORT OF THE WORK OF THE STANDING COMMITTEES AND SUGGESTIONS FOR FUTURE EFFORT, 1922-23.

The success and value of Women's Institutes is due, in a large measure, to the fact that the Institutes have been required, in order to secure assistance from the Government by way of lectures, literature and grants, to carry on a certain

amount of work through the utilization of local talent and resources. They have been much encouraged and assisted in their work through the co-operation made possible by establishing standing committees. It is to be hoped that the outline of possible activities as given below, will be found of real worth to the Institutes.

It is not expected that any one branch will form committees for each of the lines of work outlined, or carry out the full programme of any one committee.

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## REPORT OF THE COMMITTEE ON AGRICULTURE FOR 1922.

Mrs. Ida V. Leggett, Newboro, Convener.

Judging from reports received and from reports *not* received, Eastern and Central Ontario have taken the most interest in agriculture during the past year. However, the official report speaks of branches in Western and Northern Ontario, planting trees in parks and public grounds, assisting at School Fairs and Flower Shows, levelling parks, reclaiming waste places, distributing flower seeds to the children of the district, holding demonstrations in butter-making, working for better roads, even organizing and carrying out a fall fair successfully, which shows that the whole province is engaged more or less actively in agricultural work.

There seems to be a misunderstanding in some districts about the work of the agricultural committee. A northern lady writes: "We do not understand what we are to do." An eastern lady says: "We have a horticultural society here and we do not think it wise to *form another organization.*" Now, please do not look upon the agricultural committee as a separate organization. The Ontario Government, through the Department of Agriculture, have prepared for the use of the farming communities a number of splendid opportunities. A few of these are vegetables and flower seeds free for children intending to compete at school fairs, eggs for hatching, and calf and pig clubs where pure bred stock may be obtained for a very small sum, also free bulletins on bee-keeping poultry raising, small fruit growing and upon the various difficult farm problems. The work of the Agricultural Committee is simply to help these various activities in every way in our power and not to start any new thing.

Perhaps it may be helpful to the branches to quote our programme:

1. Encourage the establishment of school gardens, or school-directed home gardens, by co-operation in making, care, and the provision of a supply of seeds.

2. Encourage the side lines in farming: Bee-keeping, poultry raising, small fruit growing by interesting more people in them.

3 Find a good market for busy mothers where they can dispose of fresh eggs and broilers for cash.

4. Encourage the use of vacant lots by poor people for gardening purposes.

5. Work for beautiful Canada by keeping the roadsides free of weeds; burning rubbish and waste material; planting of trees, shrubs and flowers. Encourage in villages the disposal of disfiguring fences between lots and the marking of divisions by strips of flowers.

Arrange for illustrated lectures in the community in horticulture and agriculture.

One report reads: "Dorset has cleaned up the town." We are hoping that every branch will do the same for their village or town next year. Try some team work. Divide your village into quarters with a captain for each division.

Give prizes for the quarter that shows the greatest improvement, and one for the most beautiful section. Interest the children and young people by asking their help in work and remembering that they need this training as our future citizens. A number of branches give prizes at the school fairs. Why not give a prize for the most attractive school and grounds in your division, and another for the school and grounds showing the greatest improvement before fair day?

You will find in every community some children living in a bare, cheerless house devoid of all conveniences, even the well from which they draw their water supply is a quarter of a mile away in some neighbour's yard. If these children attend a bare, bleak school where are they to get any training in the love of the beautiful? Next Arbor Day take some plants and go to the school. Help the children to make window boxes, flower beds and plant vines, shrubs and trees. Use hardy plants, such as scarlet geraniums, which will stand much hardship and yet look cheerful. Be sure that each child has at least one plant to call its own. Tell them that you will come back on the closing day in June and also the first of September and will bring a treat for all the children who have taken good care of their plants. You will find the teacher glad to supervise the children in their work. A camera might be used to show some "before" and "after" pictures.

If there is a Horticultural Society in your neighbourhood join forces with it and help it along, but if there is not, form a community Horticultural Society by dividing and exchanging plants, trees, shrubs and vines.

A number of branches are cleaning and beautifying their churchyards and cemeteries. This is a good work, and we hope that no branch will allow the yard surrounding God's house to become dirty or disorderly.

We noticed last spring in one of the Toronto dailies that the people of Peel County had secured the services of a competent landscape gardener, and that upon a certain date they were all to assemble to learn how they could make their county the most beautiful in the province. Will some member from Peel County tell us the result?

Renfrew Agricultural Society gave special prizes (open to Institutes only) for exhibits in household and utility work. Seven branches competed and their displays were greatly admired.

I hope that the convention will exchange ideas and form plans for more effective work in the coming year. See Women's Institutes Report for 1920-21 for further information.

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## EDUCATION AND BETTER SCHOOLS, 1922.

Miss K. F. McIntosh, Brampton, Convener.

To our programme of last year we should like to add the following suggestions.

An investigation by Institutes of the possibilities of University extension, either by a single lecture or by a series. Full information regarding these courses can be secured from Mr. W. J. Dunlop, Director of Extension, Toronto University.

Reading courses are commended, also travelogues and current events reports.

Home and school committees of the Institute have placed books on live stock, nature study and history in school libraries; other have presented pictures such as "Fathers of Confederation" to their schools.

In Leeds and Grenville, the four district Women's Institute presidents and secretaries met the three Public School Inspectors, making arrangements for an

educational campaign, the ultimate aim of which is the employment of three school nurses.

Peel assisted with the support of two school nurses and supplied clothing, etc., necessary for the social service work the nurses found to do. Glasses and treatments were provided for poorer children.

Goderich placed a supply of old clean linen squares in the school to be given to little folk coming without handkerchiefs. Scales were purchased, and the Institute is supplying milk to underweight pupils.

Many Institutes throughout the Province have placed paper towels, soap, basins, etc., in the schools. Others have been responsible for oiled floors, ventilators, redecoration and new blackboards.

Huron reports at least ten schools in the county where some definitely helpful work has been carried on in the schools by the Institutes. A monthly school visiting day—a Friday from three to four—serves to establish close contact between teachers, pupils and the Institutes.

Branches have donated bulbs, shrubs, plants and seeds to the pupils for the beautifying of their grounds.

The work of the school nurse could be greatly facilitated if each county where this work is established were to have a fund to which they might have access for the treatment of needy cases. One of the leading doctors doing survey work for the Department of Education suggests that the establishment of a school nursing service throughout the province would be helped by each Institute giving over one meeting entirely to discussion on the question, and further suggests that a Home and School Committee be formed in every Institute.

The Women's Institutes generally show a marked advance in their interest in, and successful co-operation with the schools, teachers and trustees; also with the district representatives in the school fairs. There is, of course, a steadily increasing interest in and demand for the Department Short Courses all over the province, and considerable work is being done for local libraries both travelling and established. The branches also show marked improvement in the planning and carrying out of their monthly programmes.

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## REPORT OF THE STANDING COMMITTEE ON IMMIGRATION.

MISS E. J. GUEST, DEPT. OF AGRICULTURE, CONVENER.

The programme which the committee has been attempting to carry out, with a fair measure of success, throughout Ontario, is:

1. To secure as full information as possible of immigrant families settling in Ontario, or girls and women employed as domestics in homes throughout the province from:

(*a*) The Colonization Department of the Ontario Government.
(*b*) The Employment Labour Bureau.
(*c*) The Soldier Settlement Board.

2. To secure as full information as possible re children being placed in Ontario homes from:

(*a*) The Children's Aid Society.
(*b*) The Barnardo Homes.
(*c*) The Salvation Army.

4. To emphasize through articles written, through lectures and discussion, the importance of getting in touch with the newcomers and leading them to realize that they have a part to play in advancing community interests.

To see that the children of immigrant families or those placed in homes by the Children's Aid Society, or the Barnardo Homes attend school regularly.

To report all cases of cruelty, overwork, neglect, on the part of those employing help, to the proper authorities.

To report all cases of children or parents suffering from contagious or infectious diseases or who are mentally deficient, to the proper authorities and where necessary to take any other action advisable.

To co-operate with the Children's Aid Society in securing good homes for the children for adoption, and to take an active interest in supporting local Children's Shelters.

To familiarize all with the Immigration Laws.

A new problem which is facing several districts, is where old Ontario homesteads are being purchased by foreigners who have different ideas about homemaking, different customs, and in some instances, speak another language.

Much remains to be done here in bringing all newcomers, but especially the foreign-born who are settling in these homesteads, into the Institute where they may imbibe and contribute to the highest ideals in homemaking and good Canadian citizenship.

One Eastern Ontario branch elects a committee, changing monthly, whose special duty it is to visit and welcome all newcomers, whether native or foreign, to the community. This is a practical form of usefulness.

The Junior Institutes have been active in making baby layettes for soldier settlers and needy newcomers.

The Women's Institutes were represented by two members of your committee at the Immigration Conference called by the Honourable Mr. Doherty, September 5, 1922, to decide on the means to be used for attracting immigrants and for the promulgation of a permanent policy of immigration for the province. After thorough discussion by representatives from the chief business and social interests of Ontario, the following resolution was unanimously carried:

"This conference is of the opinion that the Government of Ontario would be justified in adopting, in co-operation with the Imperial Government and Federal Government, a sane aggressive immigration policy with the object of increasing settlement in rural Ontario and developing the natural resources of the province; and this conference is of the opinion that in developing such policy careful consideration should be given to the following features:

The bringing out, training and placing of British boys from 14 to 16 years of age.

"The bringing out and placing of experienced farmers with families by making provision for living accommodation on lines acceptable to the immigrant and the farmer.

"The encouragement of farmers with capital and the extension of loans now available to farmers of three years' residence in the province. The continuation of immigration of domestic servants and farm labour with such assistance in transportation and reception and supervision as may be found practical."

Further information regarding developments along these lines will be furnished from time to time.

The senior branches have been co-operating effectively with the Soldier Settlement Board. Mrs. Jean Muldrew, director of the Home branch for the Dominion Government, writes as follows:

Most districts report a live interest in the various Children's Aid Societies,

considerable material assistance in money and supplies being given as well as keen interest taken in the welfare of the children placed out, their care and attendance at school.

An aroused opinion too, co-operates more effectively with the authorities regarding health, and in reporting cases of the mentally deficient to the proper authorities.

Your convener has kept in close touch with the Canadian Women's Hostel, Toronto, which receives and welcomes young women coming as assistant home-makers from other countries to Ontario. Assistance has been rendered to the Labour Bureau, and to those in charge of the orphan children of soldiers in ascertaining the character of the homes in the country from which applications come.

It is suggested that each Institute doing work of this kind appoint one of its members to report to the district secretary all immigration work done by the branch during the year, and that each member of the standing committee on immigration get in touch with the district secretaries in her district, collecting, compiling and forwarding this information to the convener for publicity and other purposes.

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## PUBLICITY.

Miss Chapman, Toronto, Convener.

In promoting the publicity of the work of the Women's Institutes this year, we wish to try the experiment of making every Institute member a member of the publicity committee, and we urge that each individual, whenever she knows of an item of Institute news worthy of publication, to write it out in detail and send it to the convener of the Provincial Publicity Committee, in order that we may have the fullest possible account of Institute work for our next annual report. These news items will also be sent to the farm press, and through the syndicate press to local papers.

Branch secretaries are also requested to send to the convener, news of the work of their branches, that these may be given due publicity in the annual report.

Photographs of interesting Institute gatherings, or illustrative of some special line of work being done are most valuable both for the press and for the annual report. Snap shots taken with an ordinary camera reproduce well if they are clear and not too small.

In general our programme shall be:

1. To try to influence secretaries and branch members to announce meetings to the community through the local press and over the telephone. This stimulates both interest and a full attendance. Members can do much to extend the influence of their Institute by personally inviting non-members in the neighbourhood to attend meetings.

2. To encourage the practice of sending detailed reports of meetings regularly to the local press. Sometimes a special publicity secretary is appointed, usually a girl who likes the practice in newspaper reporting, or the work may be done by the regular secretary.

3. To get the secretary or some other member to report to the convener, or direct to the farm press, magazines, or daily papers, any news of province-wide interest, such as an unusual or especially meritorious line of work done by an Institute, that this may be circulated throughout the province. Any special

feature of work done by one Institute should be an inspiration to others. News of every good community or public benefit effort should be sent to the editors of the Women's Section of the city daily papers. The knowledge that rural women and city women are working along similar philanthropic lines will do something to create a better understanding between the city and the country.

4. To impress every Institute member with the publicity value of photographs as outlined above. Editors are always ready to publish good photographs, and the picture often makes an impression which an article alone would not make.

## HEALTH AND CHILD WELFARE.

DR. MARGARET PATTERSON, TORONTO, CONVENER.

As a means of stimulating interest in the conservation of health, your committee asked each branch to devote one meeting entirely to the study of matters connected with health. Realizing the importance of proper food, not only as a necessity to the child in order that it may grow and develop both physically and mentally, but to the adult also as a factor in maintaining health, we asked that the subject for study during the past year be "Nutrition."

The committee furnished some material to assist where necessary in the preparation of papers for the health meeting. It was our desire to promote a more general understanding of the principles of nutrition, especially stressing the importance of an abundance of milk and green vegetables in the diet, and a study of our common wholesome foods that may be used to advantage in place of the highly commercialized foods that are so much in use to-day. We also suggest getting the local Doctor and health nurse to take part in the health meeting and to distribute at this meeting the "Baby Book" of the Ontario Department of Agriculture, also the booklets prepared by Dr. Helen MacMurchy of the Federal Department of Health, Ottawa. The committee wishes to emphasize the importance of every housekeeper, mother, or homemaker, getting on the mailing list of the Dairy Branch of the Dominion Department of Agriculture. The information contained in the leaflets prepared by Miss Campbell on the value and use of dairy products is invaluable to anyone who has the privilege or responsibility of feeding a family.

It has been a little disappointing that so few of the branches have reported, but the reports that have been received are most encouraging and show something of the valuable work that is being done in distributing the health publications of both the Provincial and Dominion Governments, of the hearty co-operation in promoting medical inspection in the schools and the assistance given in securing permanent nurses for the rural sections.

There has been very keen interest taken in the courses offered by the Department on health, home nursing and first aid.

In view of the terrible ravages of venereal diseases, as modern medical knowledge now reveals the facts to us, and as these diseases are entirely preventable and are due to lack of information, we have decided to ask that the health meeting this year should be devoted to a study of "Syphilis." Again we would suggest getting the literature from the health departments to distribute at the meeting, enlisting the help of the local doctor and the health nurse to assist in making the meeting one suited to the locality; for there is not a community that can afford to ignore the menace of this disease. The National Council for combating venereal diseases have some very helpful literature. Mrs. Pank-

hurst can be secured to address a meeting by writing to York House, York and King Streets, Toronto. Your convener will be pleased to recommend literature, or otherwise give help to any branch that requests it.

We further request that an effort be made to promote the circulation of helpful literature on health and hygiene. The government has prepared very helpful literature on the Prevention of Disease, Social Hygiene, Care of the Baby, Sanitation, Sewage Disposal, House Ventilation and many other subjects. These are free for the asking; let us see that they are in the hands of every Institute member. Women are the guardians of the health of the people; let us prove worthy of our trust.

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## HOME ECONOMICS.

Miss Olive Cruikshank, Director of Home Economics, Macdonald Institute, O. A. C., Guelph, Chairman.

The programme of the committee on Home Economics shall be:

To maintain the first ideal of the Women's Institute organization on the welfare of the home and the progress in the profession of homemaking, by helping the women of Ontario to solve a few of the many problems which are facing them at the present time, by helping them to develop in their homes and in their communities better living and better working conditions which will bring a richer and a more satisfying life to every member of the family.

Each woman has a vision of what life would mean to her family, but too often she fails to attain this ideal, because the routine work, with its heavy manual labour, absorbs so much of her time and energy.

How can more time and energy be saved? Not from domestic service as such service is both expensive and hard to get; much, however, can be done by improving the working conditions, e.g., by the installation of an efficient heating system, a running water system, by introducing power machinery to operate the churn and the washing machine, by studying efficient methods of household management, including the best arrangement for kitchens, the convenient arrangement of the wash room and laundry, etc. Thus can time and energy be saved, and conditions created under which the work can most easily be performed.

The Women's Institute plans to help in this, but, it also plans to help the community to understand and apply the laws of nutrition and hygiene, through demonstrations in child care and feeding, in food selection for the family, in training in the essentials of home nursing. It plans to cultivate the idea that investment in the comfort, beauty, health and efficiency of the home and the community is a wise and a legitimate expenditure.

To aid the Women's Institute in this work, the Ontario Department of Agriculture, through the Institute branch, sends out demonstration lecturers and arranges for short courses in some communities; it assists in maintaining district representatives (in one county a home demonstration worker); it maintains the Macdonald Institute, which is the Home Economics Department of the Ontario Agricultural College. Macdonald Institute offers three short courses each college year (each course lasts three months) one opening in September, one opening in January, and one opening in April; a one year Homemaker Course; a two year Associate Course; a two year Institutional Management Course; and, two year Home Economic Teacher's Course, for those holding teachers' certificates. Macdonald Institute has a splendidly equipped home economics library

which is at the service of the Institutes. The library of the Ontario Agricultural College aids the Institutes by sending out packets on such subjects as the garden, the farm, the school, the community country life, roads, water supply, electricity, literary societies, debates, books and reading, entertainment, games, recreation, education, holidays, citizenship, immigration, rural credit, government, social welfare, travel, fairs, etc.

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## RESOLUTIONS.

At the Provincial Convention at Toronto, the following resolutions from different conventions or individual Institutes were endorsed or passed:

From the convention of the northwestern area, held at Fort Frances, resolutions appreciating the work of the Provincial Department of Health through its Public Health Nurses; to support the Federation of Institutes; appreciating the service to Institute work, and particularly to the conventions, of the superintendent, Mr. Putnam; a protest against the laxity with which quarantine laws are enforced; a resolution appealing to the government to establish in the northwestern district, schools for secondary education similar to the school at Monteith, and to provide some means of education for children in the sparsely settled districts along the railway lines; an appeal that provision be made to secure Travelling Libraries for all parts of the province on an equitable basis so far as transportation charges are concerned; a request for the appointment of Home Demonstrators to give to the women of the farms the same service that the Agricultural Representative gives to the men; a resolution pledging the women of the Institutes to do all in their power to encourage the filming of a better class of moving pictures by attending only "such as are moral and instructive," and recommending that films of an educational nature be shown in the schools.

From the Institutes of Peel County; resolutions recommending that rural school teachers send monthly reports to parents, and that some means be devised whereby rural school children may be granted their entrance certificates on the same basis as town children; that the wife be joint owner with her husband in all real and personal property; that the Institutes stand on record for supervised playgrounds, especially during noon hour at schools, and for teaching children to stand at attention during the singing of the National Anthem. The resolution for supervised play was also brought in by the Eady Institute.

From the Port Credit Institute, a resolution that a delegation be appointed to request the government to amend the law giving the mother equal rights with the father in the guardianship of children. A similar resolution, with over one hundred signatures attached, was presented by the Institutes of South Grey, with a clause included asking for equality of penalty for men and women breaking the moral laws.

A resolution passed at an educational conference called by the O.A.C. Alumni Association, recommending that a royal commission be appointed to make a study of the educational system with special reference to rural districts, was endorsed by the convention.

A resolution presented by the Scarboro Institute petitioning the government for greater care and segregation of the feeble-minded, was supported by many signatures.

# FEDERATED WOMEN'S INSTITUTES OF ONTARIO

OFFICERS FOR 1922-23.

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*Honorary Presidents*.....Mr. Geo. A. Putnam, Superintendent of Institutes, Toronto.
Mrs. Wm. Todd, Orillia.

*President*.....Mrs. Geo. Edwards, Komoka.

*Vice-Presidents*.....Mrs. H. Dummert, Carleton Place.
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Mrs. Jas. Gardner, Owen Sound.

*Corresponding Secretary*....Mrs. Chas. Macoun, R.R. 4, Campbellford.

*Recording Secretary*.....Miss W. Brodie, Department of Agriculture, Toronto.

*Executive*.....The President, Vice-Presidents, Corresponding Secretary and Mrs. A. McTaggart, Fort Frances, Mrs. C. F. Allison, Bath; Mrs. (Dr.) Sparks, St. Marys; Miss Margaret Scott, Agincourt.

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*Health*.....Dr. Margaret Patterson, 97 Walmer Road, Toronto.
*Agriculture*.....Mrs. R. G. Leggett, Newboro.
*Home Economics*.....Miss O. Cruikshank, Macdonald Institute, Guelph.
*Education and Better Schools*..Miss K. F. McIntosh, Brampton.
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## CHAIRMEN OF CONVENTION COMMITTEES:

| | | |
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| North-Western Ontario, | | Mrs. A. McTaggart, Fort Frances. |
| Northern | " | Mrs. A. H. Willet, Cochrane. |
| Eastern | " | Mrs. Chas. Yates, Athens. |
| Western | " | Mrs. Geo. Edwards, Komoka. |
| Central | " | Miss Margaret Scott, Agincourt. |

# Ontario Department of Agriculture

APPENDIX

TO

ANNUAL REPORT

OF THE

# Agricultural Societies

1922

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS AND PRIZE-WINNING GRAIN AT WINTER FAIRS THE CANADIAN NATIONAL AND CENTRAL CANADA EXHIBITIONS

PRINTED BY ORDER OF
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# APPENDIX

TO

# REPORT OF AGRICULTURAL SOCIETIES

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The Agricultural Societies of the Province continue to show their appreciation of the Legislative Grants voted by the Ontario Government each year to enable the Societies to conduct Standing Field Crop Competitions and offer substantial prizes for same. These competitions have been taken up by nearly one-half of the Societies in the Province, and many who have not previously entered are beginning to take an interest in them. Of the one hundred and seventy which entered in 1922, one hundred and nineteen entered in two, and fifty-one in single crops. The Combined Standing Field Crop and Threshed Grain Competitions are attracting more Societies each year on account of the large amount of prize money offered, viz., $275 divided among the winners in each crop.

The following table shows the number of crops entered for the Regular and Combined Competitions in 1922:

| | Regular | Combined | Total |
|---|---|---|---|
| Oats | 118 | 38 | 156 |
| Spring Wheat | 5 | 1 | 6 |
| Fall Wheat | 19 | .. | 19 |
| Barley | 4 | .. | 4 |
| Peas | 2 | .. | 2 |
| Corn | 41 | 3 | 44 |
| Potatoes | 44 | 3 | 47 |
| Turnips | 7 | .. | 7 |
| Mangolds | 4 | .. | 4 |
| | 244 | 45 | 289 |

As in 1921 the scoring of the crops in the fields was performed by judges employed by the Ontario Department of Agriculture, except potatoes, which, together with the grain in the bins, were scored by officials of the Dominion Seed Branch, Ottawa.

The testing of samples of grain by officials of the Dominion Seed Branch takes a good deal of time, and, owing to the staff being undermanned, there was considerable delay before the list of winners in the Combined Field Crop and Threshed Grain Competitions could be announced last winter. This will, however, I understand, be remedied in 1923 and the results given out earlier in the season.

J. Lockie Wilson, *Superintendent.*

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| ALGOMA | | [20] | [25] | [10] | [20] | [25] | [100] | |
| BRUCE MINES AGR. SOCIETY. | | | | | | | | |
| *Judge—A. S. Smith, Seagull.* | | | | | | | | |
| H. Skusky, Bruce Mines, R.R. 3.. | O. A. C. 72..... | 18½ | 24 | 8½ | 19½ | 22½ | 93 | |
| John Carter, Portlock..... | do ..... | 17½ | 23 | 8½ | 18½ | 23½ | 91 | |
| J. R. Stobie, do ..... | Banner..... | 18½ | 22 | 7½ | 19 | 23½ | 90½ | 15, 12, 17 |
| Robt. Carter, do ..... | O. A. C. 72..... | 17 | 23 | 8 | 19 | 23 | 90 | 12, 4 |
| Saml. Rowe, Bruce Mines, R.R. 1. | Abundance..... | 18 | 22 | 9 | 18 | 22 | 89 | 12, 5 |
| Jno. Shaule, do R.R. 1. | Tartar King..... | 17½ | 20½ | 8½ | 19½ | 23 | 87*a* | 15, 4 |
| Robt. S. McEwen, do R.R. 1. | do ..... | 18 | 19 | 8½ | 19 | 23½ | 86*a* | |
| Geo. Morbin, do R.R. 1. | O. A. C. 72..... | 17 | 22 | 8½ | 15 | 23 | 85½ | |
| Fred Hopper, do R.R. 1. | Banner..... | 15½ | 22 | 8½ | 17½ | 20½ | 84 | |
| Alex. Shaule, do R.R. 1. | Sensation..... | 17½ | 22 | 6½ | 16½ | 21½ | 82*a* | |
| Leslie Mills, do R.R. 2. | do ..... | 15½ | 22 | 8 | 16 | 20½ | 80*a* | |
| Jos. Rogers, Jr., do R.R. 1. | O. A. C. 72..... | 16 | 18½ | 8 | 16 | 20 | 78½ | |
| R. Jeffrey, do R.R. 2. | Granary Filler.... | 16½ | 14½ | 4½ | 19½ | 19 | 74 | 2, 15 |
| Wm. T. Vaughan, do R.R. 2. | do .... | 15½ | 15 | 7 | 16½ | 22 | 74*a* | 15 |
| Jas. R. Vaughan, do R.R. 1. | Tartar King..... | 15½ | 14½ | 6½ | 17½ | 21 | 73*a* | 15 |
| A. Nicholson, do R.R. 1. | Banner..... | 15½ | 12½ | 6½ | 16½ | 20½ | 71½ | |
| CENTRAL ALGOMA AGR. SOCIETY. | | | | | | | | |
| *Judge—Robt. Berry, St. Mary's, R.R. 1.* | | | | | | | | |
| J. Knight, S. S. Marie, R.R. 1.. | Banner ..... | 18 | 23 | 4½ | 15 | 23 | 83½ | 9, 15 |
| T. W. Farmer, do R.R. 2.. | do ..... | 15 | 23 | 6 | 20 | 18½ | 82½ | |
| G. H. Farmer, do R.R. 2.. | do ..... | 12½ | 25 | 8½ | 20 | 14 | 80 | |
| C. Egglesfield, do R.R. 2.. | do ..... | 16 | 20 | 5 | 15 | 20 | 76 | 15 |
| W. J. Conway, do R.R. 1.. | Northland..... | 17½ | 10 | 7½ | 18 | 22½ | 73½*a* | 9, 10 |
| Fred. Walton, do Box 63.. | Banner ..... | 16½ | 10 | 6½ | 18 | 21½ | 72½ | 1 |
| H. Penno, do R.R. 2.. | do ..... | 16 | 11 | 7 | 18 | 19½ | 71½ | 10 |
| H. Knight, Jr., do R.R. 1.. | do ..... | 15 | 15 | 9 | 12 | 19½ | 70½ | 9 |

*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth, method of seeding and absence of lodging.

†Yield and quality of grain—Considering proportion of well-filled heads of plump grain of good quality and uniformity of maturity.

‡See key page.

*a*Points deducted for non-standard variety.

NOTE.—The figures in brackets at the top are maximum possible scores.

# RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

## OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| ALGOMA.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| NORTH SHORE AGR. SOCIETY. | | | | | | | | |
| *Judge—A. S. Smith, Seagull.* | | | | | | | | |
| P. H. Evoy, Bar River | Northland | 18½ | 23 | 9½ | 18½ | 24 | 91½*a* | 4, 12 |
| G. W. Evoy, do | do | 17 | 24 | 9 | 19½ | 22½ | 90*a* | |
| A. Stewart, do | do | 17½ | 21½ | 8½ | 19½ | 24 | 89*a* | 4, 12 |
| R. L. Evoy, do | do | 18½ | 20 | 9 | 19 | 23½ | 88*a* | 15, 12 |
| A. Brodie, do | do | 18½ | 20 | 8½ | 18½ | 23½ | 87*a* | 12 |
| H. Henry, do | do | 16 | 24 | 8½ | 19 | 20½ | 86*a* | |
| H. S. Chappell, do | Banner | 17 | 21 | 7 | 19 | 21½ | 85½ | 12 |
| Jno. W. Booth, do | Northland | 17 | 22 | 7½ | 17½ | 23 | 85*a* | |
| C. Moore, McLennan | do | 15½ | 21 | 9 | 17½ | 23½ | 84½*a* | 4 |
| J. A. Davidson, do | Banner | 16½ | 23 | 6½ | 17 | 21 | 84 | 4, 15 |
| E. V. Evoy, Bar River | Northland | 15½ | 22 | 9 | 17½ | 21 | 83*a* | 12 |
| Wm. Barkley, do | do | 16 | 21 | 8½ | 18½ | 20½ | 82½*a* | |
| Alex. Gunn, do | do | 14 | 21 | 9 | 18½ | 21 | 81½*a* | 12 |
| A. L. Tuckett, Echo Bay | Imp. Ligowa | 15½ | 21 | 6½ | 17½ | 22 | 80½*a* | |
| THESSALON AGR. SOCIETY. | | | | | | | | |
| *Judge—Robt. Berry, St. Mary's, R.R. 1.* | | | | | | | | |
| Jas. Rowan, Thessalon, R.R. 1 | Banner | 19 | 23 | 5 | 19½ | 23½ | 90 | |
| A. J. Bell, Sowerby | Abundance | 16½ | 24 | 5½ | 20 | 23 | 89 | |
| D. W. Seabrook, Sowerby | Banner | 16½ | 23 | 9 | 18 | 21½ | 88 | |
| Thos. Cordukes, Thessalon, R.R. 2 | do | 16½ | 24 | 3 | 19 | 21½ | 84 | |
| Wm. Weir, do R.R. 2 | Abundance | 15 | 22 | 9 | 18 | 18½ | 82½ | 15 |
| Jno. McDougall, Sowerby | Banner | 15 | 22 | 5 | 15 | 23 | 80 | 4, 1 |
| D. McLennan, Thessalon | Abundance | 16½ | 10 | 9 | 20 | 22½ | 78 | 15, 3 |
| I. Leach, do | Banner | 14½ | 17 | 5 | 17 | 18½ | 72 | 1 |
| Jno. R. McLennan, do | Abundance | 14 | 9 | 8 | 19 | 20½ | 70½ | |
| Jos. Walker, do | Granary Filler | 11½ | 22 | 4 | 15½ | 17 | 70 | 15 |
| BRUCE. | | | | | | | | |
| ARRAN AND TARA AGR. SOCIETY. | | | | | | | | |
| *Judge—Andrew Schmidt, Mildmay.* | | | | | | | | |
| G. P. Kennedy, Tara, R.R. 5 | Banner | 18½ | 18 | 8 | 19½ | 23 | 87 | 1 |
| M. Legge, Dobbinton | O. A. C. 72 | 18 | 23 | 5 | 18 | 21½ | 85½ | 14 |
| Jas. F. Young, Tara, R.R. 5 | Banner | 18 | 21 | 8½ | 14 | 21½ | 83 | 15, 14 |
| Jno. E. Dolphin, Tara | do | 17½ | 21 | 9 | 13 | 22 | 82½ | 15, 14 |
| Austin Legge, Dobbinton | do | 17½ | 20 | 7 | 16 | 21½ | 82 | 15 |
| F. Sim, Tara, R.R. 2 | do | 14½ | 22 | 5 | 17½ | 18 | 77 | 15, 4 |
| R. L. Coleman, Tara, R.R. 2 | do | 16 | 10 | 8½ | 17 | 20 | 71½ | 1, 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| BRUCE.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| CARRICK AGR. SOCIETY. | | | | | | | | |
| *Judge—Wm. Bailie, Goderich.* | | | | | | | | |
| J. L. Tolton, Walkerton, R.R. 3 | Amer. Banner | 20 | 25 | 10 | 20 | 25 | 100 | |
| Andrew Schmidt, Mildmay, R.R. 1 | O. A. C. 72 | 20 | 22 | 10 | 20 | 25 | 97 | 1 |
| W. A. Rowand, Walkerton, R.R. 1 | do | 19 | 25 | 9 | 20 | 23 | 96 | |
| D. Borho, Formosa, R.R. 1 | do | 20 | 20 | 10 | 20 | 25 | 95 | |
| W. A. Tolton, Walkerton | Amer. Banner | 20 | 18 | 10 | 20 | 25 | 93 | 1 |
| Jno. Bickel, Mildmay, R.R. 4 | O. A. C. 72 | 20 | 20 | 8 | 20 | 23 | 91 | |
| Geo. J. Fischer, do R.R. 2 | do | 20 | 15 | 8 | 20 | 25 | 88 | 1, 14 |
| G. B. Armstrong, Teeswater, R.R. 1 | Banner | 20 | 5 | 10 | 20 | 25 | 80 | 1 |
| M. Weiler, Formosa | O. A. C. 72 | 20 | 5 | 10 | 20 | 23 | 78 | 1, 15 |
| N. Durrer, Mildmay | Banner | 20 | .... | 10 | 20 | 25 | 75 | 1 |
| B. Goetz, do R.R. 2 | Amer. Banner | 20 | .... | 10 | 20 | 20 | 70 | 1 |
| CHESLEY AGR. SOCIETY. | | | | | | | | |
| *Judge—Wm. Bailie, Goderich.* | | | | | | | | |
| M. Thompson, Chesley | Banner | 20 | 25 | 10 | 20 | 25 | 100 | |
| Jas. Crerar, do | Am. Banner | 20 | 25 | 10 | 20 | 23 | 98 | |
| Thos. M. Oswald, do R.R. 2 | O. A. C. 72 | 20 | 22 | 9 | 20 | 25 | 96 | 15 |
| Jno. M. Thompson, do | do | 20 | 23 | 5 | 20 | 25 | 93 | |
| Jno. Oswald, do R.R. 2 | do | 20 | 20 | 9 | 20 | 23 | 92 | 1 |
| J. A. McDermid, Paisley, R.R. 3 | do | 19 | 24 | 8 | 18 | 22 | 91 | 15 |
| Robt. Sloan, Chesley | do | 19 | 20 | 8 | 18 | 24 | 89 | 15 |
| P. McTavish, do R.R. 1 | do | 16 | 15 | 8 | 20 | 23 | 82 | 11, 15 |
| HEPWORTH AGR. SOCIETY. | | | | | | | | |
| *Judge—A. Schmidt, Mildmay.* | | | | | | | | |
| A. Walker, Hepworth | O. A. C. 72 | 17 | 23 | 8 | 16 | 21½ | 85½ | 14 |
| H. Anderson, do | do | 18½ | 23 | 8½ | 10 | 22½ | 82½ | 14, 13 |
| Jno. Eldridge, do | do | 17½ | 21 | 8 | 14 | 21½ | 82 | 13 |
| C. A. Millard, do | do | 15 | 22 | 7 | 17 | 19 | 80 | 10 |
| Geo. Miller, Allenford | Imp. Banner | 16½ | 13 | 9 | 16 | 21½ | 76 | 1,13 |
| Jas. Tomlinson, Shallow Lake | Banner | 14½ | 23 | 6 | 12 | 19 | 74½ | 13 |
| H. Hewitson, Owen Sound, R.R. 5 | Imp. Banner | 17 | 15 | 5 | 14 | 21 | 72 | 1, 15 |
| C. A. Barfoot, Shallow Lake | White Wave | 16½ | 15 | 7 | 13 | 21 | 70½*a* | 15, 14, 1 |
| LUCKNOW AGR. SOCIETY. | | | | | | | | |
| *Judge—Robert Medd. Auburn, R.R. 3.* | | | | | | | | |
| Jno. McLeod, Kinloss, R.R. 2 | O. A. C. 72 | 18½ | 25 | 10 | 20 | 18 | 91½ | |
| W. Henderson, Lucknow, R.R. 3 | Siberian | 20 | 20 | 10 | 17 | 25 | 90*a* | |
| Jos. Colling, do R.R. 3 | Imp. Ligowa | 20 | 22 | 10 | 15¼ | 24 | 89¼*a* | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| BRUCE.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| LUCKNOW AGR. SOCIETY—*Con.* | | | | | | | | |
| P. J. McMillan, Lucknow, R.R. 5 | O. A. C. 72 | 14 | 23 | 7 | 20 | 25 | 89 | |
| D. Graham, Kinloss, R.R. 5 | do | 16½ | 20 | 10 | 17 | 25 | 88½ | |
| R. J. Woods, Lucknow, R.R. 2 | do | 17 | 25 | 10 | 15 | 21 | 88 | |
| W. E. McPherson, do R.R. 2 | Siberian | 15 | 20 | 10 | 17½ | 25 | 85½*a* | 15 |
| K. R. McKenzie, do R.R. 6 | O. A. C. 72 | 16 | 17 | 10 | 18 | 24 | 85 | 15 |
| Alex. McLeod, Kinloss | Danish | 13 | 25 | 10 | 15 | 24 | 85*a* | |
| Baird Bros., Lucknow, R.R. 3 | Siberian | 14 | 20 | 8 | 18 | 23 | 81*a* | 15 |
| H. R. Rutherford, do R.R. 2 | White Wave | 14 | 20 | 10 | 15 | 23 | 80*a* | |
| Wm. Rutherford, do R.R. 2 | Rennie's Yielder | 17 | 25 | 8 | 10½ | 20 | 78½*a* | |
| Lloyd Phillips, do R.R. 2 | King George | 18 | 20 | 7 | 15 | 20 | 78*a* | |
| W. G. McKenzie, do R.R. 6 | Danish | 17 | 15 | 10 | 15 | 22 | 77*a* | 15, 11 |
| A. Walton, do R.R. 2 | 20th Century | 13 | 25 | 10 | 10 | 19 | 75*a* | |
| Jno. Webster, do R.R. 2 | Siberian | 17 | 15 | 5 | 18 | 20 | 73*a* | 1 |
| N. G. McKenzie, do R.R. 3 | Sensation | 17 | 10 | 8 | 14 | 24 | 71*a* | |
| TEESWATER AGR. SOCIETY. *Judge—Robt. Medd, Auburn, R.R. 3.* | | | | | | | | |
| A. and W. McKague, Teeswater, R.R. 1 | O. A. C. 72 | 20 | 23 | 9 | 20 | 21 | 93 | |
| Harold Smyth, Greenock, R.R. 1 | do | 18 | 20 | 9 | 20 | 24 | 91 | |
| Wm. McKenzie, Teeswater, R.R. 2 | do | 20 | 20 | 8 | 18 | 24 | 90 | |
| T. A. Goodfellow do R.R. 2 | do | 18 | 25 | 10 | 15 | 21 | 89 | |
| Wm. G. Keith, do ..... | do | 17 | 18 | 9 | 20 | 23 | 87 | 10 |
| Thos. B. Aitken, do R.R. 2 | do | 15 | 18 | 10 | 20 | 23 | 86 | 1 |
| D. Keith, do ..... | do | 17 | 15 | 10 | 18 | 24 | 84 | 10 |
| A. G. Reid, do R.R. 1 | do | 14 | 18 | 10 | 20 | 19 | 81 | 15 |
| D. McDonald, do ..... | do | 17 | 12 | 10 | 17 | 24 | 80 | 1 |
| A. McLennan, do R.R. 3 | do | 15 | 15 | 8 | 18 | 22 | 78 | 1 |
| Robt. Aitken, do R.R. 2 | do | 15 | 18 | 5 | 18 | 22 | 78 | 1 |
| WIARTON AGR. SOCIETY. *Judge—T. L. Mercer, Markdale.* | | | | | | | | |
| Wm. Lembke, Wiarton, R.R. 2 | O. A. C. 72 | 19 | 25 | 9 | 19 | 24 | 96 | |
| E. J. Loney, Oxenden, R. R. 2 | Banner | 18 | 25 | 9 | 19 | 21 | 92 | |
| Fred Schroeder, Wiarton, R.R. 2 | do | 15 | 22 | 10 | 18 | 25 | 90 | 1 |
| A. Lembke do R.R. 2 | O. A. C. 72 | 16 | 24 | 10 | 15 | 21 | 86 | 14, 15 |
| Carl Lembke, do R.R. 2 | do | 14 | 22 | 10 | 18 | 20 | 84 | 14, 15 |
| Alex. McCoag, do R.R. 1 | Banner | 15 | 15 | 8 | 18 | 23 | 79 | 1, 14, 11 |
| F. Carder, do R.R. 2 | O. A. C. 72 | 17 | 12 | 7 | 19 | 23 | 78 | 1 |
| G. A. Loney, do R.R. 2 | do | 16 | 16 | 6 | 18 | 21 | 77 | 1, 14 |
| A. W. North, do R.R. 2 | Banner | 13 | 14 | 8 | 18 | 22 | 75 | 1, 14 |
| J. P. Sims, do R.R. 2 | O. A. C. 72 | 14 | 18 | 5 | 18 | 17 | 72 | 14. 1 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| DUFFERIN. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| DUFFERIN AGR. SOCIETY. | | | | | | | | |
| *Judge—D. L. McClure, Brampton.* | | | | | | | | |
| Jos. H. Jackson, Orangeville, R.R. 1 | Banner | 17½ | 20 | 8 | 19 | 23½ | 88 | |
| W. H. Hunter, do R.R. 2 | Bonanza | 15 | 18 | 8 | 19 | 22 | 80*a* | 15 |
| Joshua Bradley, Amaranth | Granary Filler | 16½ | 19½ | 8 | 11 | 22 | 77 | |
| W. H. Gillespie, Orangeville, R.R. 3 | O. A. C. 72 | 16 | 18 | 8 | 12 | 22½ | 76½ | |
| J. D. Hoare, Amaranth Sta., R.R. 1 | Banner | 15 | 18½ | 8 | 11 | 22 | 74½ | |
| E. T. B. Corbett, Orangeville, R.R. 6 | Abundance | 17 | 10 | 8 | 17 | 22 | 74 | 1 |
| J. J. Leighton, do R.R. 1 | Banner | 14½ | 18 | 5 | 18 | 17 | 72½ | |
| W. C. Watson, do R.R. 6 | Am. Banner | 11½ | 20 | 8 | 19 | 13 | 71½ | |
| Geo. Lightle, Amaranth Sta., R.R.1 | Banner | 13½ | 16 | 7½ | 13 | 21 | 71 | |
| S.C.W. Hughson, Orangeville, R.R.2 | Early Cluster | 13 | 16 | 8 | 12 | 23 | 70*a* | |
| B. C. Cook, do R.R. 6 | Abundance | 10 | 16 | 9 | 15 | 20 | 70 | 10, 15 |
| DUFFERIN CENTRAL AGR. SOCIETY. | | | | | | | | |
| *Judge—D. L. McClure, Brampton.* | | | | | | | | |
| Geo. E. Foster, Honeywood | Banner | 16 | 22 | 8 | 19 | 22 | 87 | 15 |
| J. S. Richardson, Shelburne, R.R. 1 | White Wave | 18 | 22 | 8 | 17½ | 23 | 86½*a* | |
| W. J. Davison, do R.R. 4 | Banner | 17½ | 20 | 7 | 18½ | 23 | 86 | |
| Archie Greer, Mansfield, R.R. 1 | do | 18 | 20 | 7½ | 18 | 22 | 85½ | 15 |
| H. A. Leitch, Hornings Mills, R.R. 1 | O. A. C. 72 | 17 | 21 | 8 | 17 | 22 | 85 | 15 |
| Thos. G. Reaburn, Shelburne, R.R.4 | Banner | 16½ | 20 | 8 | 18 | 22 | 84½ | 1 |
| Robt. J. Hall, do R.R. 2 | Lincoln | 16½ | 20½ | 8 | 18½ | 22½ | 84*a* | |
| A. McFarlane, Jessopville, R.R. 1. | White Wave | 17 | 18 | 7 | 16 | 22 | 78*a* | |
| Jas. H. McKee, Shelburne, R.R. 4 | O. A. C. 72 | 15½ | 12 | 8 | 18 | 21 | 74½ | 1 |
| Roy Best, do R.R. 2 | Lincoln | 16 | 12 | 8 | 16 | 22 | 72*a* | 1 |
| Lester Hill, do R.R. 4 | Banner | 15 | 12½ | 4 | 18 | 22 | 71½ | 1 |
| Rice Hill, do R.R. 4 | do | 16 | 7 | 9 | 18 | 21 | 71 | 1 |
| A. H. Davison, do R.R. 4 | do | 16 | 8½ | 7 | 17 | 22 | 70½ | 1 |
| W. J. Hamilton, do R.R. 5 | do | 13 | 17 | 5 | 14½ | 21 | 70½ | 1 |
| DUNDAS. | | | | | | | | |
| MOUNTAIN AGR. SOCIETY. | | | | | | | | |
| *Judge—W. E. Gray, Elgin, R.R. 3.* | | | | | | | | |
| S. D. Thorpe, S. Mountain | Banner | 17 | 24½ | 7½ | 19 | 22½ | 90½ | 15, 10 |
| Wm. Farrel, Winchester, R.R. 3 | do | 18 | 19½ | 9½ | 20 | 23 | 90 | |
| Jas. K. Clarke, Mountain, R.R. 2 | O. A. C. 72 | 17½ | 23 | 8 | 19 | 21½ | 89 | 12, 15 |
| J. W. Flegg, S. Mountain | Banner | 18 | 19 | 8½ | 19 | 22½ | 87 | 12, 5, 2 |
| Jas. Higginson, Inkerman | White Wave | 15½ | 23 | 8½ | 19½ | 22 | 86½*a* | 15, 10, 4 |
| Chas. Shaver, S. Mountain | Danish Islander | 17 | 22 | 9 | 18 | 22 | 86*a* | 5 |
| Wm. Cleland, do | O. A. C. 72 | 18 | 16 | 8½ | 19½ | 23½ | 85½ | 12, 2 |
| W. G. Timmins, Inkerman | White Wave | 15½ | 20 | 8 | 18 | 21 | 80½*a* | 5, 12 |
| Boyd Timmins, do | do | 14 | 14½ | 9 | 19½ | 21½ | 76½ | 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| DUNDAS.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| MOUNTAIN AGR. SOCIETY.—*Con.* | | | | | | | | |
| R. K. Graham, S. Mountain | Gold Rain | 15 | 15 | 8 | 20 | 20 | 76*a* | 5, 12 |
| Herb. Walter, Winchester, R.R. 3 | Danish Islander | 16½ | 10 | 9 | 19 | 23 | 75½*a* | 2, 5 |
| Robt. Mulholland, S. Mountain | O. A. C. 72 | 16 | 12 | 8 | 18 | 21 | 75 | 2, 15, 10 |
| E. Montgomery, do | Danish | 16 | 14 | 7½ | 18 | 20 | 73½*a* | 2, 5, 10 |
| Jno. Baldwin, Winchester, R.R. 3 | O. A. C. 72 | 17 | 10 | 7½ | 18 | 20 | 72½ | 2, 4, 5 |
| Geo. T. Timmins, Inkerman | White Wave | 15½ | 10 | 9 | 17 | 21½ | 71*a* | 2, 5 |
| DURHAM. | | | | | | | | |
| CARTWRIGHT AGR. SOCIETY. | | | | | | | | |
| *Judge—E. H. Purdy, Port Perry.* | | | | | | | | |
| S. H. Malcolm, Nestleton Sta. | O. A. C. 72 | 19 | 25 | 10 | 20 | 25 | 99 | |
| L.E. Mountjoy, Burketon Jct., R.R.1 | Irish | 19 | 23 | 8 | 20 | 25 | 93*a* | 12 |
| J. G. Marlow, Blackstock | do | 19 | 23 | 9 | 18 | 25 | 92*a* | |
| A. Wright, do | Am. Banner | 19 | 22 | 9 | 18 | 23 | 91 | 12 |
| Carl J. Wright, do | Derby | 19 | 22 | 5 | 20 | 25 | 89*a* | |
| E. Nesbitt, do | O. A. C. 72 | 16 | 20 | 8 | 18 | 23 | 85 | |
| J. R. Nesbitt do | Am. Banner | 14 | 20 | 7 | 20 | 20 | 81 | |
| Fred. Taylor, Nestleton | Prince Royal | 18 | 18 | 8 | 18 | 20 | 80*a* | |
| N. H. Marlow, Burketon, R.R. 1 | O. A. C. 72 | 15 | 22 | 7 | 15 | 20 | 79 | |
| Geo. Nesbitt, Nestleton | Am. Banner | 13 | 18 | 8 | 18 | 20 | 77 | |
| FRONTENAC. | | | | | | | | |
| KINGSTON IND. SOCIETY. | | | | | | | | |
| *Judge—W. Monaghan, Wellington.* | | | | | | | | |
| J. D. Morris, Portsmouth, R.R. 1 | Banner | 18 | 24 | 9 | 19 | 23 | 93 | 15 |
| C. A. Kincaid, Kingston Mills, R.R.1 | O. A. C. 72 | 16½ | 24 | 9 | 20 | 23 | 92½ | 4 |
| W. J. Berry, do | Banner | 16½ | 24½ | 9 | 19 | 23 | 92 | 10 |
| W. J. Hunter, do | O. A. C. 72 | 16½ | 24 | 9 | 19 | 23 | 91½ | |
| Jas. Henderson & Son, Portsmouth, R.R. 1 | Banner | 16½ | 24 | 9 | 19 | 22½ | 91 | 15 |
| C. F. Baxter, Kingston, R.R. 1 | O. A. C. 72 | 16½ | 23 | 9 | 19 | 23 | 90½ | 5 |
| Jas. Bradden, Kingston Mills | Banner | 16 | 24 | 9 | 19 | 22 | 90 | 4 |
| Thos. Doyle, Kingston, R.R. 1 | O. A. C. 72 | 15 | 23 | 9 | 19 | 23 | 89 | 5 |
| C. Rodgers, do R.R. 1 | do | 14½ | 23 | 9 | 19 | 23 | 88½ | 5 |
| A. M. Smith, Westbrook | do | 18½ | 20 | 8½ | 19 | 22 | 88 | 5 |
| Jas. Baxter, Kingston, R.R. 1 | Banner | 16½ | 23 | 8 | 18 | 22 | 87½ | |
| J. A. Penny, do R.R. 1 | do | 14½ | 23 | 8½ | 19 | 22 | 87 | 10 |
| A. E. Weller, do R.R. 5 | O. A. C. 72 | 16½ | 20 | 8 | 20 | 22 | 86½ | 15 |
| W. Gordon, do R.R. 1 | Banner | 15 | 23 | 8 | 18 | 22 | 86 | 10 |
| Jas. Shortell, do R.R. 1 | do | 15½ | 23 | 8 | 17 | 22 | 85½ | 15 |
| J. Sibbitt, do R.R. 1 | O. A. C. 72 | 15 | 21 | 8 | 19 | 22 | 85 | 15 |
| Ed. Bradden, do R.R. 1 | do | 14½ | 21 | 8 | 19 | 22 | 84½ | 15 |
| W. Fowler, do R.R. 1 | Banner | 14¼ | 22 | 7½ | 18 | 22 | 83¾ | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| FRONTENAC.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| KINGSTON IND. SOC.—*Con.* | | | | | | | | |
| Geo. Maitland, Kingston Mills.... | Banner..... | 13½ | 23 | 8 | 17½ | 21½ | 83½ | 15 |
| A. C. Day, Portsmouth, R.R. 1... | Imp. Banner..... | 15 | 20 | 8 | 18 | 22 | 83 | 15 |
| J. Brown, Kingston, R.R. 2..... | O. A. C. 72..... | 13½ | 21 | 8 | 18 | 22 | 82½ | 10 |
| E. Hunter, do R.R. 1..... | Banner ..... | 14 | 22 | 8 | 16 | 22 | 82 | 15 |
| E. Elliott, do R.R. 5..... | O. A. C. 72..... | 12 | 20 | 8 | 19 | 22 | 81 | 5, 15 |
| M. Fowler, do R.R. 1..... | Banner ..... | 14 | 20 | 8 | 16 | 22 | 80 | 4, 15 |
| WOLFE ISLAND AGR. SOCIETY. | | | | | | | | |
| *Judge—W. Monaghan, Wellington.* | | | | | | | | |
| R. J. White, Wolfe Island, R.R. 1 | Banner ..... | 18 | 24 | 9 | 19 | 23 | 93 | 4 |
| S. J. Woodman, do R.R. 1 | O. A. C. 72..... | 17 | 24 | 9 | 20 | 22½ | 92½ | |
| Wm. Allum, do R.R. 4 | do ..... | 17 | 23 | 9 | 20 | 23 | 92 | 4 |
| Ace Hough, do ..... | Banner ..... | 17½ | 24 | 9 | 19 | 22 | 91½ | |
| H. Tarrant, do R.R. 4 | do ..... | 17½ | 23 | 9 | 19 | 22½ | 91 | 4 |
| Jno. Keys, do R.R. 2 | O. A. C. 72..... | 15½ | 24 | 9 | 20 | 22 | 90½ | |
| Wm. Hall, do R.R. 2 | Banner ..... | 16 | 23 | 8 | 19 | 23 | 89 | 15 |
| Geo. Friend, do R.R. 3 | do ..... | 15½ | 23 | 9 | 19 | 22 | 88½ | 15, 4 |
| Jas. Grant, do R.R. 2 | do ..... | 16½ | 22 | 8½ | 18½ | 22½ | 88 | 4 |
| S. Hogan, do R.R. 1 | Swedish C..... | 16 | 22½ | 8 | 20 | 23 | 87½*a* | 4, 15 |
| Wm. Kyle, do R.R. 4 | O. A. C. 72..... | 15½ | 23 | 8½ | 18 | 22½ | 87½ | |
| M. Wiggons, do R.R. 2 | Banner ..... | 16 | 22½ | 8 | 18 | 22½ | 87 | |
| A. McReady, do R.R. 3 | do ..... | 15½ | 22½ | 8½ | 18 | 22 | 86½ | 10, 4 |
| D. Watts, do R.R. 4 | do ..... | 15½ | 22½ | 9 | 17 | 22 | 86 | 15 |
| H. McCready, do R.R. 1 | O. A. C. 72..... | 14½ | 23 | 8 | 18 | 22 | 85½ | 4 |
| Thos. Dignum, do R.R. 1 | Banner ..... | 15 | 23 | 7 | 18 | 22 | 85 | 4, 15 |
| Jno. Greenwood, do R.R. 3 | do ..... | 14½ | 22 | 8 | 18 | 22 | 84½ | 5, 4, 15 |
| Jno. Hall, do ..... | do ..... | 14½ | 21½ | 8 | 18 | 22 | 84 | 4, 15 |
| Jas. Hulton, do R.R. 1 | do ..... | 14 | 18 | 8½ | 17 | 21½ | 79 | 4, 15 |
| R. Kesler, do R.R. 1 | Kitchener..... | 12 | 22 | 7 | 19 | 20½ | 78½*a* | 15 |
| Wilmer Keys, do R.R. 2 | Banner ..... | 12 | 20 | 8 | 18 | 20 | 78 | 10, 4, 15 |
| GLENGARRY. | | | | | | | | |
| KENYON AGR. SOCIETY. | | | | | | | | |
| *Judge—W. E. Gray, Elgin, R.R. 3.* | | | | | | | | |
| F. K. McLeod, Dunvegan..... | Banner ..... | 18 | 23½ | 8½ | 18 | 21½ | 89½ | 4 |
| Norman Campbell, Moose Creek, R.R. 1..... | do ..... | 19 | 15 | 9½ | 19 | 24½ | 87 | 15, 2 |
| Chas. Blaney, Maxville..... | do ..... | 18 | 22 | 9 | 15 | 22 | 86 | 15, 12 |
| K. K. McLeod, Dunvegan, R.R. 2 | do ..... | 16½ | 21 | 8½ | 18 | 21½ | 85½ | 15, 12 |
| Angus, J. McLeod, do R.R. 1 | do ..... | 16½ | 23 | 7½ | 18 | 19½ | 84½ | 12, 4 |
| Jas. Villeneuve, do R.R. 2 | do ..... | 15 | 21 | 9 | 19 | 19½ | 83½ | 4, 15 |
| Wm. F. Campbell, Moose Creek, R.R. 1..... | do ..... | 15½ | 16 | 9 | 19½ | 22 | 82 | 2 |
| A. A. McLeod, Dunvegan, R.R. 1 | do ..... | 17½ | 15 | 9 | 19 | 20½ | 81 | 2, 12 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| GLENGARRY.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| KENYON AGR. SOCIETY.—*Con.* | | | | | | | | |
| Wm. S. Arkinstall, Dunvegan R.R. 2 | Siberian | 16½ | 16½ | 9 | 18 | 21½ | 79½*a* | 2, 10 |
| Dan. McLeod, do | Banner | 17½ | 11 | 9½ | 19 | 22 | 79 | 2, 15, 12 |
| Wm. E. McKillican, Maxville | O. A. C. 72 | 15½ | 17 | 9 | 17 | 20 | 78½ | 2, 6 |
| W. D. Chisholm, Dunvegan, R.R. 1 | Siberian | 17½ | 12 | 9 | 19 | 20½ | 76*a* | 2, 4 |
| A. D. Munroe, Maxville, R.R. 1 | Banner | 15½ | 10 | 7½ | 19 | 20 | 72 | 4, 12, 2 |
| ST. LAWRENCE VALLEY AGR. SOC. | | | | | | | | |
| *Judge—Geo. R. Bradley, Ottawa.* | | | | | | | | |
| O. Cote, Williamstown | New Banker | 18 | 23 | 8½ | 18 | 21½ | 87*a* | 4 |
| S. Snyder, Lancaster | Banner | 15 | 20 | 8½ | 20 | 20 | 83½ | 15, 2 |
| A. A. McLennan, Lancaster | O. A. C. 72 | 16 | 20 | 8 | 18 | 21 | 83 | 15 |
| Jno. J. Dingwall, Williamstown | do | 16 | 20 | 7 | 18 | 21 | 82 | 2 |
| W. J. Clark, Lancaster | Banner | 14½ | 18½ | 7½ | 20 | 21 | 81½ | 2 |
| Wm. Mitchell, Bainsville | Siberian | 16 | 20 | 7½ | 18 | 21 | 80½*a* | 2, 4 |
| Donald McLennan, Lancaster | Banner | 14 | 20 | 7½ | 18 | 20½ | 80 | 2 |
| Wm. Robertson, Martintown | do | 16½ | 20 | 8 | 14 | 21 | 79½ | 4 |
| J. D. McLennan, Lancaster | do | 14 | 17½ | 8 | 16 | 21½ | 77 | 2 |
| F. Robertson, Williamstown | O. A. C. 72 | 15 | 16 | 7 | 16½ | 20 | 74½ | 2, 10 |
| F. Fraser, Lancaster | Banner | 14 | 15 | 7 | 16 | 20½ | 72½ | 10, 2 |
| W. H. Robertson, Martintown | do | 13½ | 16 | 8½ | 13 | 20 | 71 | 4 |
| GREY | | | | | | | | |
| EAST GREY AGR. SOCIETY. | | | | | | | | |
| *Judge—Alex. Morrison, Creemore, R.R. 2.* | | | | | | | | |
| J. W. Davis, Markdale, R.R. 4 | O. A. C. 72 | 17 | 24 | 9 | 18 | 22 | 90 | |
| Robt. Swanton, Flesherton | do | 16 | 23 | 8 | 18 | 22 | 87 | 2 |
| A. D. Irwin, Priceville, R.R. 3 | do | 14½ | 22 | 8 | 18 | 21½ | 84 | |
| J. A. Lever, Flesherton | Banner | 14 | 22 | 7½ | 17 | 21½ | 82 | |
| W. J. Moore, Proton, R.R. 3 | O. A. C. 72 | 15½ | 20 | 7 | 16 | 21½ | 80 | 2 |
| R. O. Turner, Eugenia | do | 15 | 17 | 8 | 18 | 20 | 78 | 1, 2 |
| J. T. Sled, Flesherton | do | 14 | 19 | 7 | 17 | 20 | 77 | 1, 2 |
| Bert McLoughry, Markdale, R.R.4 | do | 13 | 17 | 8 | 18 | 20 | 76 | 14, 10, 15 |
| L. A. Fisher, Flesherton | do | 11½ | 16 | 8 | 18 | 20½ | 74 | 1, 11, 2 |
| Geo. Beecroft, do | do | 11½ | 17 | 6 | 17½ | 19 | 71 | 11, 1, 2 |
| HOLLAND AGR. SOCIETY. | | | | | | | | |
| *Judge—R. Wilton, Wingham.* | | | | | | | | |
| R. S. Lee, Chatsworth | Banner | 20 | 23 | 8½ | 18 | 23 | 92½ | 11 |
| W. J. Carson, do R.R. 3 | do | 19½ | 24 | 9 | 17 | 22½ | 92 | |
| Mac. Cameron, Owen Sound, R.R. 4 | O. A. C. 72 | 18½ | 24 | 7½ | 19½ | 22 | 91½ | |
| W. G. Milson, Chatsworth, R.R. 3 | Imp. Banner | 18 | 24 | 8½ | 17 | 23 | 90½ | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| GREY.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| HOLLAND AGR. SOCIETY.—*Con.* | | | | | | | | |
| A. Kemp, Chatsworth, R.R. 5 | O. A. C. 72 | 18 | 23 | 8½ | 18 | 22½ | 90 | |
| E. P. Hamill, do R.R. 4 | Banner | 19½ | 16 | 8½ | 18 | 22 | 84 | 1 |
| T. A. McDonald, do R.R. 3 | O. A. C. 72 | 19½ | 16 | 8 | 17 | 23 | 83½ | 1, 15 |
| H. Mitchell, do R.R. 3 | Banner | 17 | 15 | 8 | 14 | 21 | 75 | 2, 1 |
| Jas. B. McDonald, do R.R. 3 | do | 17 | 10 | 7 | 16 | 22 | 72 | 1 |
| Chas. Pringle, do R.R. 2 | Silver Mine | 17 | 12½ | 7 | 16 | 21 | 71½*a* | |
| KEPPEL AGR. SOCIETY. | | | | | | | | |
| *Judge—Geo. W. Glover, Collingwood, R.R. 2.* | | | | | | | | |
| M. Bedell, Kemble | Granary Filler | 13 | 24¾ | 9¾ | 19¾ | 21½ | 88¾ | |
| A. Garvie, do R.R. 2 | do | 12¾ | 24½ | 9½ | 19½ | 21½ | 87¾ | 14 |
| L. Hurlbut, do R.R. 2 | do | 12 | 24¾ | 9½ | 19¾ | 21 | 87 | |
| Jno. McGregor, do R.R. | do | 13¾ | 21¼ | 9½ | 19½ | 22 | 86 | 14, 10, 1 |
| R. Ward, do R.R. 1 | do | 18¾ | 22 | 7½ | 10 | 24½ | 82½ | |
| Geo. McKenzie, do R.R. 1 | do | 14¼ | 9¾ | 9¾ | 19¾ | 22½ | 76 | 1 |
| Jno. Taylor, do R.R. 1 | do | 14 | 9¾ | 9¾ | 19¾ | 22 | 75¼ | 1 |
| F. Davidson, do R.R. 1 | do | 13 | 9¾ | 9½ | 19¾ | 21½ | 73½ | 1 |
| D. Davidson, do R.R. 1 | do | 12 | 9¼ | 9½ | 19¾ | 21 | 71½ | 14, 11, 1 |
| KILSYTH AGR. SOCIETY. | | | | | | | | |
| *Judge—Geo. W. Glover, Collingwood, R.R. 2.* | | | | | | | | |
| J. A. Forgrave, Owen Sound, R.R. 5 | Banner | 18¾ | 24¾ | 9¾ | 20 | 24½ | 97¾ | |
| A. S. Donald, Tara, R.R. 5 | do | 18 | 25 | 9¾ | 20 | 24 | 96¾ | |
| A. Fleming, do | do | 17 | 25 | 10 | 20 | 23½ | 95½ | |
| H. Ruhl, do | do | 16¾ | 24¾ | 9½ | 20 | 23½ | 94½ | |
| H. Breen, do | do | 16 | 25 | 9¾ | 20 | 23 | 93¾ | |
| J. W. Sherman, do | do | 16 | 24¾ | 9¾ | 20 | 22¾ | 93¼ | |
| E. H. Coulter, Owen Sound, R.R. 3 | do | 14 | 25 | 9¾ | 19¾ | 22 | 90¼ | |
| Geo. Wylie, Kilsyth | do | 14 | 24¾ | 9¾ | 19¾ | 22 | 90¼ | 14 |
| I. McInnis, Owen Sound, R.R. 4 | do | 14 | 24½ | 9½ | 20 | 22 | 90 | |
| W. H. Marshall, do R.R. 5 | do | 14 | 25 | 9½ | 19¾ | 21¾ | 90 | |
| Jno. Leask, do R.R. 3 | do | 12¾ | 24¾ | 9½ | 10 | 21½ | 88½ | |
| H. Sergeant, do R.R. 4 | do | 13½ | 24½ | 9½ | 19½ | 21 | 88 | |
| Geo. Anderson, do R.R. 3 | do | 14 | 21¾ | 9½ | 20 | 22 | 87¼ | 1 |
| O. R. Smith, do R.R. 4 | do | 12 | 24½ | 9¾ | 19½ | 21 | 86¾ | 14 |
| J. M. Lynn, do R.R. 3 | do | 13¾ | 9¾ | 9½ | 19¾ | 22 | 74¼ | 1 |
| Jas. Lynn, do R.R. 3 | do | 13 | 10 | 9½ | 20 | 22 | 74½ | 14, 1 |
| Jas. R. Aicken, Tara, R.R. 5 | do | 16 | 24¾ | 9½ | | 22¾ | 73 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| GREY.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| MEAFORD AND ST. VINCENT AGR. SOCIETY. | | | | | | | | |
| *Judge—D. Smith, Smithville.* | | | | | | | | |
| Wm. Pollock, Meaford, R.R. 2 | Yel. Russian | 18 | 22 | 9 | 18 | 21 | 88 | |
| Alex. Loucks, do R.R. 2 | do | 18 | 22 | 7 | 18 | 21 | 86 | 15 |
| F. J. Eaton, do R.R. 1 | Banner | 17 | 20 | 7 | 18 | 21 | 83 | |
| Ross A. Loucks, Rocklyn, R.R. 2 | Yel. Russian | 16½ | 20 | 8 | 17 | 21 | 82½ | 1 |
| C. R. Shields, Meaford, R.R. 1 | Danish | 19 | 20 | 8 | 14 | 21 | 80*a* | |
| Jas. Robertson, Rocklyn, R.R. 2 | Yel. Russian | 16½ | 20 | 8 | 14 | 19½ | 78 | 1 |
| Batty Bros., do | Northland | 17½ | 20 | 8 | 12 | 21 | 76½*a* | 15 |
| Everett Martin, do | Banner | 16 | 15 | 8 | 17 | 20 | 76 | 1, 2 |
| Jos. Lowe, Meaford, R.R. 1 | Victory | 17 | 15 | 6 | 18 | 20 | 74*a* | 2 |
| W. A. Johnson, do Box 332 | Scottish Hero | 16 | 14 | 7 | 17 | 19 | 71*a* | 1 |
| Wm. Cramp, do R.R. 2 | Banner | 15½ | 16 | 8 | 14 | 17 | 70½ | 2 |
| OSPREY AGR. SOCIETY. | | | | | | | | |
| *Judge—W. H. Davis, Ivy, R.R. 7.* | | | | | | | | |
| A. Morrison, Maxwell | Granary Filler | 17 | 17 | 8 | 18 | 22 | 82 | 10, 1 |
| Alex. McLean, McIntyre | O. A. C. 72 | 15 | 16 | 6 | 14 | 20 | 71 | 15, 13, 4 |
| E. Hawton, Feversham | do | 16 | 10 | 8 | 19 | 17 | 70 | 1, 10, 15 |
| PRICEVILLE AGR. SOCIETY. | | | | | | | | |
| *Judge—W. H. Davis, Ivy, R.R. 7.* | | | | | | | | |
| Jas. Turner, Priceville, R.R. 3 | O. A. C. 72 | 16 | 19 | 9 | 18 | 22 | 84 | 15 |
| David Nichol, do | do | 16 | 18 | 8 | 17 | 21 | 80 | 15 |
| Thos. Nichol, do R.R. 1 | Banner | 16 | 15 | 8 | 17 | 22 | 78 | 13, 15 |
| Chas. Huddy, do | O. A. C. 72 | 14½ | 15 | 8 | 18 | 20 | 75½ | 1 |
| M. McLean, do R.R. 3 | do | 16 | 7 | 9 | 17 | 22 | 71 | 11, 15, 1 |
| PROTON AGR. SOCIETY. | | | | | | | | |
| *Judge—Alex. Morrison, Creemore, R.R. 2.* | | | | | | | | |
| Thos. Walton, Dundalk, R.R. 1 | O. A. C. 72 | •17½ | 24 | 8 | 18 | 22 | 89½ | 11 |
| J. W. Hanna, do R.R. 2 | New Industrial | 16 | 23 | 9 | 18 | 21½ | 85½*a* | 15, 2 |
| Ernest Eble, Corbetton, R.R. 3 | Reg. Bonanza | 16½ | 22 | 9 | 18 | 21 | 84½*a* | 2 |
| Jno. Cronnin, Cedarville, R.R. 1 | Yel. Russian | 16 | 20 | 8 | 17 | 22 | 83 | 2 |
| Geo. Bell, Dundalk, R.R. 4 | Banner | 16 | 20 | 6 | 18 | 22 | 82 | 2 |
| J. McPherson & Sons, do R.R. 2 | $1,000 | 15½ | 21 | 8 | 15 | 22 | 79½*a* | 2 |
| Jno. McQuarrie, do R.R. 2 | Northland | 15½ | 20 | 8 | 17 | 20 | 78½*a* | 2 |
| R. N. Fowler & Sons, do R.R. 1 | Yel. Russian | 16½ | 20 | 8 | 13 | 20½ | 78 | 2 |
| Robt. Kinnell, Hopeville, R.R. 1 | O. A. C. 72 | 15½ | 18 | 7 | 17 | 20 | 77½ | 2 |
| R. Cronnin, Riverview, R.R. 1 | Yel. Russian | 14½ | 18 | 7 | 17 | 20½ | 77 | 11 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| GREY.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| PROTON AGR. SOCIETY.—*Con.* | | | | | | | | |
| Lonsway, Corbetton, R. R. 3 | O. A. C. 72 | 14 | 18 | 7 | 17 | 20½ | 76½ | 2 |
| Wm. A. Goodfellow, Dundalk | Banner | 12½ | 18 | 9 | 17 | 19 | 75½ | 2 |
| J. A. Fraser, do R.R. 2 | O. A. C. 72 | 15 | 18 | 8 | 13 | 21 | 75 | 2 |
| J. A. Russell, do R.R. 3 | Yel. Russian | 15 | 17 | 7 | 15 | 20 | 74 | 2 |
| Jno. Cosgrove, Cedarville | Banner | 13 | 17 | 7 | 16 | 20 | 73 | 10, 1 |
| E. Carson, Dundalk | do | 13 | 17 | 6 | 17 | 19 | 72 | 2 |
| ROCKLYN AGR. SOCIETY. *Judge—D. Smith, Smithville.* | | | | | | | | |
| R. Storey, Meaford, R.R. 4 | Scottish Hero | 17 | 20 | 8 | 18 | 21 | 82*a* | 15 |
| Otto Foy, Markdale, R.R. 2 | O. A. C. 72 | 17 | 20 | 8 | 14 | 20 | 79 | |
| Wm. H. Sewell, Blantyre | do | 18 | 12 | 10 | 17 | 21 | 78 | 1 |
| G. L. Currie, Meaford, R.R. 2 | Granary Filler | 17 | 20 | 8 | 14 | 17 | 76 | |
| W. Thompson, do R.R. 4 | O. A. C. 72 | 17½ | 12 | 9 | 18 | 19 | 75½ | 1 |
| G. Erskine, Markdale, R.R. 2 | Abundance | 15 | 20 | 7 | 14 | 19 | 75 | |
| Thos. Langtree, Meaford, R.R. 4 | Banner | 18 | 12 | 8 | 18 | 18½ | 74½ | 1 |
| J. A. Perry, do R.R. 4 | do | 18 | 10 | 8 | 18 | 20 | 74 | 1 |
| Jno. Yeadell, Rocklyn, R.R. 2 | O. A. C. 72 | 16 | 15 | 8 | 16 | 17 | 72 | 1 |
| Robt. H. Reid, Meaford, R.R. 2 | Granary Filler | 17 | 10 | 7 | 18 | 19 | 71 | 11, 1 |
| J. J. Johnston, Markdale, R.R. 2 | O. A. C. 72 | 15½ | 12 | 8 | 16 | 19 | 70½ | 1 |
| SOUTH GREY AGR. SOCIETY. *Judge—W. H. Davis, Ivy, R.R. 7.* | | | | | | | | |
| Jas. Mather, Hanover, R.R. 1 | O. A. C. 72 | 15 | 19 | 8 | 17½ | 21 | 80½ | 15 |
| W. J. Ritchie, Durham, R.R. 1 | Banner | 16 | 18 | 8 | 18 | 20 | 80 | 15, 2 |
| J. C. Hamilton, do R.R. 4 | O. A. C. 72 | 15 | 18 | 7½ | 17 | 22 | 79½ | 15 |
| Sam'l Patterson, do R.R. 4 | do | 17 | 16 | 8 | 17 | 21 | 79 | 15, 1 |
| Wm. Weir, do R.R. 1 | do | 17 | 18 | 7 | 15 | 21 | 78 | 15, 2 |
| R. T. Edwards, Markdale, R.R. 1 | M. Cluster | 16 | 16 | 8 | 17 | 20 | 77 | 15 |
| Thos. H. Binnie, Priceville, R.R. 2 | O. A. C. 72 | 15 | 18 | 7 | 16 | 20 | 76 | 15 |
| Alex. Grierson, Hanover, R.R. 1 | Banner | 15 | 18 | 7 | 16 | 19 | 75 | 15, 2, 13 |
| Geo. Whitmore, Priceville, R.R. 1 | do | 13½ | 16 | 6 | 16 | 20 | 71½ | 15, 2 |
| M. Barber, Durham, R.R. 4 | O. A. C. 72 | 15 | 15 | 6 | 14 | 20 | 70 | 1 |
| WALTERS FALLS AGR. SOCIETY. *Judge—Richard Wilton, Wingham.* | | | | | | | | |
| E. Quinton, Walters Falls | Banner | 17½ | 24 | 8½ | 18½ | 22½ | 91 | |
| R. G. Hanna, do | do | 18 | 23 | 8 | 18 | 22½ | 89½ | |
| G. I. Reid, Goring | Reg. Banner | 19 | 22 | 8 | 17 | 23 | 89 | 15 |
| Thos. Dixon, Walters Falls | do | 17½ | 20 | 9 | 18½ | 23 | 88 | 1 |
| P. J. McLauchlan do | do | 17 | 22 | 9 | 18 | 21 | 87 | |
| Jno. Thom., do | do | 17 | 20 | 9 | 18 | 22 | 86 | 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| GREY.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| WALTERS FALLS AGR. SOC.—*Con.* | | | | | | | | |
| Jos. E. Long, Reg. Banner | Banner | 16½ | 17 | 8½ | 18½ | 21 | 81½ | 15, 1 |
| Jno. Heighes, do | do | 17 | 15 | 7½ | 18 | 22 | 79½ | 1 |
| C. W. Saunders, do | do | 17 | 12 | 8½ | 18½ | 20½ | 76½ | 1, 15, 14 |
| D. Walters, do | Australian | 16 | 22 | 7 | 10 | 22½ | 75½*a* | 15 |
| Arch. Gillies, Bognor, R.R. 2 | Banner | 18½ | 13 | 9 | 13 | 21 | 74½ | 2, 1 |
| HALTON. | | | | | | | | |
| HALTON AGR. SOCIETY. *Judge—E. H. Sills, Napanee, R.R. 3.* | | | | | | | | |
| A. Cooper, Milton | O. A. C. 72 | 19 | 23 | 9 | 17 | 22 | 90 | 15, 14 |
| J. H. Willmott, do | do | 18½ | 21 | 8 | 18 | 24 | 89½ | 14, 17, 2 |
| W. D. Shields, do | do | 16½ | 23 | 8 | 20 | 21½ | 89 | 15, 14 |
| A. McDuffie, do | do | 18½ | 22 | 9 | 16 | 23 | 88½ | 2, 4, 15 |
| G. McNair, do | Mammoth Cluster | 17 | 19 | 8 | 17 | 20 | 81 | 2, 15, 10 |
| Wm. R. Hume do | O. A. C. 72 | 14½ | 18 | 8 | 17 | 21 | 78½ | 15, 2 |
| C. C. Paterson, do | Banner | 15 | 20 | 7 | 16 | 20 | 78 | 10, 15, 14 |
| E. Harrop, do | O. A. C. 72 | 14 | 16 | 8 | 19 | 20½ | 77½ | 2, 15, 14 |
| Frankland Park Farm, Hornby | Banner | 15 | 17 | 8 | 17 | 20 | 77 | 2, 15 |
| H. Dixon, Milton | do | 11 | 20 | 8 | 18 | 20 | 77 | 14, 10, 15 |
| J. H. Wilson do | do | 12 | 18 | 8 | 17 | 21 | 76 | 15, 2 |
| G. E. Brownridge, Milton | Abundance | 14 | 16 | 6 | 16 | 20 | 72 | 2, 1, 15 |
| Geo. Agnew, do | Banner | 14 | 18 | 7 | 17 | 15 | 71 | 4, 15, 14 |
| E. A. McDougall, do | O. A. C. 72 | 10 | 16 | 7 | 18 | 19 | 70 | 2, 15 |
| E. Simpson, do | Banner | 10 | 20 | 7 | 17 | 16 | 70 | 14 |
| NELSON & BURLINGTON AGR. SOC. *Judge—Jas. McLean, Richmond Hill.* | | | | | | | | |
| H. M. Pettit, Freeman | O. A. C. 72 | 20 | 25 | 7½ | 20 | 24 | 96½ | |
| A. Heslop do R.R. 2 | do | 19¼ | 25 | 7½ | 20 | 23 | 94¾ | |
| E. Collins, Milton | Abundance | 19 | 25 | 8 | 19 | 23½ | 94½ | |
| Leslie Keans, Freeman, Box 24 | O. A. C. 72 | 19¼ | 25 | 7 | 20 | 23 | 94¼ | |
| Jno. Easton, do | do | 18¾ | 25 | 8 | 19 | 23 | 93¾ | |
| Jno. Heslop, do R.R. 2 | do | 18 | 25 | 7½ | 19 | 22 | 91½ | |
| F. E. Spence, do R.R. 1 | do | 18½ | 22 | 8 | 20 | 22 | 90½ | 15 |
| M. Watson, Tansley | do | 18½ | 24 | 6 | 20 | 21½ | 90 | 14 |
| C. N. Blanchard, Freeman, | do | 17½ | 23½ | 8 | 17 | 23 | 89 | 14 |
| M. Logan, do R.R. 2 | do | 16 | 22 | 10 | 18 | 20½ | 86½ | 10 |
| W. D. Sutton, do R.R. 2 | do | 18 | 21 | 6 | 17 | 21½ | 83½ | 10, 15 |
| Wm. Lucas, do | do | 16 | 21 | 7 | 18 | 21½ | 83½ | 15, 14 |
| Thos. Fothergill, Bronte, R.R. 1 | Banner | 18 | 18 | 7½ | 17½ | 22 | 83 | |
| W. Lucas, Freeman, R.R. 2 | Sensation | 15½ | 18 | 9 | 20 | 20½ | 81*a* | 10, 15 |
| G. Breckon, Bronte | O. A. C. 72 | 19½ | 15 | 9 | 14 | 23 | 80½ | 1 |
| Peter Cole, Freeman, R.R. 2 | do | 16 | 17 | 8 | 18 | 21 | 80 | 1 |
| Jno. Hetherington, Campbellville, R.R. 3 | Great Dane | 16½ | 17 | 9 | 18 | 21 | 79½*a* | 2 |
| L. Prescott, Freeman, R.R. 2 | | 15½ | 10 | 8 | 19 | 20½ | 71*a* | 10, 15, 14, 1, 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| HASTINGS. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| BANCROFT AGR. SOCIETY. | | | | | | | | |
| *Judge—W. H. C. Roblin, Ameliasburg.* | | | | | | | | |
| D. G. Rutledge, Hybla, R.R. 1.... | Banner ..... | 17 | 22 | 8 | 18 | 23 | 88 | 10 |
| Wm. Price, do .... | do ..... | 15 | 21 | 8 | 18 | 22 | 84 | |
| C. W. Bierworth, Bancroft, R.R. 2 | do ..... | 17 | 20 | 7 | 18 | 21 | 83 | 10 |
| L. Moore, do ..... | Abundance..... | 17 | 20 | 8 | 17 | 20 | 82 | 10 |
| F. Kelusky, do ..... | do ..... | 16 | 21 | 7 | 18 | 19 | 81 | 10 |
| Jno. Fraser, do ..... | Victor..... | 18 | 20 | 8 | 16 | 19 | 79*a* | |
| W. E. Kelusky, do R.R. 2 | Mam. Cluster..... | 14 | 20 | 8 | 16 | 20 | 78 | 10 |
| F. Froats, do ..... | Banner ..... | 16 | 18 | 8 | 17 | 18 | 77 | 10 |
| Wm. A. Gaebel, do ..... | Abundance..... | 15 | 20 | 7 | 14 | 20½ | 76½ | 10, 17 |
| Scott Vaden, do ..... | do ..... | 12 | 22 | 8 | 18 | 16 | 76 | |
| Jno. Derry, do ..... | Mam. Cluster..... | 15 | 20 | 8 | 12 | 20 | 75 | 10 |
| Jno. Lebarge, do ..... | Banner ..... | 15 | 18 | 7 | 16 | 18½ | 74½ | 10 |
| Ed. Vardy, do R.R. 1 | Abundance..... | 15 | 15 | 7 | 18 | 19 | 74 | 4, 10 |
| Ed. Maxwell, do ..... | do ..... | 14 | 18 | 7 | 16 | 18 | 73 | 10 |
| Jno. O'Brien, do R.R. 2 | Mam. Cluster..... | 15 | 16 | 8 | 14 | 19 | 72 | 10 |
| A. Mountney, do ..... | do ..... | 14 | 15 | 7 | 18 | 17 | 71 | 8, 2, 10 |
| MADOC AGR. SOCIETY. | | | | | | | | |
| *Judge—C. Mallory, Bloomfield.* | | | | | | | | |
| Henry Kells, Madoc..... | O. A. C. 72..... | 19¼ | 24½ | 9¾ | 19¾ | 24½ | 97¾ | 12 |
| Jas. A. Caskey, Madoc..... | do ..... | 18¾ | 24½ | 9¾ | 19¾ | 24¼ | 97 | |
| H. Rollins, Cooper..... | do ..... | 18¾ | 24 | 9¾ | 19¾ | 24 | 96¼ | 12 |
| J. S. Empey, Eldorado..... | do ..... | 18¾ | 24 | 9¾ | 19¼ | 24 | 95¾ | |
| Jno. Lewis, Madoc..... | do ..... | 18 | 24 | 9 | 19¾ | 24 | 94¾ | |
| I. Broadworth, Madoc..... | do ..... | 17½ | 24 | 9½ | 20 | 23½ | 94½ | 4 |
| S. McCary, Eldorado..... | do ..... | 17 | 24 | 9¾ | 20 | 22¼ | 93 | |
| Chas. Robinson, do ..... | do ..... | 18¾ | 24 | 8 | 18 | 24 | 92¾ | |
| F. A. Comerford, do ..... | do ..... | 18 | 22 | 8½ | 20 | 24 | 92½ | |
| Jos. Chambers, do ..... | Banner ..... | 16¾ | 22 | 9½ | 19¾ | 24 | 92 | 15, 10 |
| W. T. Harris, Madoc,..... | O. A. C. 72..... | 16 | 24 | 9 | 19½ | 21½ | 90 | 12 |
| Ed. McIlroy, do ..... | Banner..... | 17½ | 24 | 9 | 15 | 22 | 87½ | |
| Mrs. H. Blakley, do ..... | Granary Filler.... | 14½ | 24 | 9 | 18 | 21 | 86½ | |
| Wm. Boyle, Eldorado..... | O. A. C. 72..... | 14½ | 24 | 8½ | 19 | 20 | 86 | |
| C. Jno. Smith, Madoc..... | O. A. C. 72..... | 18 | 15 | 8 | 19¾ | 24½ | 85¼ | |
| MAYNOOTH AGR. SOCIETY. | | | | | | | | |
| *Judge—W. H. C. Roblin, Ameliasburg.* | | | | | | | | |
| Jno. Heinne, Maynooth..... | Granary Filler.... | 17½ | 22 | 9 | 18 | 22½ | 89 | |
| Walter Kelusky, do ..... | Tartar King..... | 16 | 23 | 8 | 16 | 20 | 81*a* | 10 |
| Jos. H. Davis, Greenview..... | Banner ..... | 15 | 18 | 8 | 18 | 20½ | 79½ | 17, 10 |
| Wm. J. McAlpine, Maynooth..... | do ..... | 15 | 20 | 8 | 16 | 20 | 79 | 10 |
| E. E. Douglas, Greenview..... | Bumper King..... | 16½ | 18 | 7 | 18 | 20½ | 78*a* | 10 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| HASTINGS.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| MAYNOOTH AGR. SOCIETY.—*Con.* | | | | | | | | |
| Jas. McAlpine, Maynooth | Banner | 15 | 20 | 7 | 15 | 20 | 77 | 10 |
| Chas. Heinne, Monteagle Valley | Tartar King | 14 | 18½ | 8 | 16 | 20 | 74*a* | 17, 10 |
| Wm. Kelusky, Maynooth | do | 14 | 18 | 7 | 16 | 19 | 72*a* | 10 |
| STIRLING AGR. SOCIETY. | | | | | | | | |
| *Judge—M. J. Casselman, Morrisburg.* | | | | | | | | |
| T. J. Thompson, Stirling, R.R. 1 | Banner | 18½ | 24 | 9 | 19 | 22½ | 93 | |
| R. Heath, Harold, R R 1 | do | 18½ | 23 | 9 | 17 | 23½ | 91 | 12 |
| Geo. Griffin, Stirling | do | 17 | 23 | 8 | 20 | 22½ | 90½ | 4, 1 |
| C. M. Sine, Stirling, R.R. 1 | do | 15½ | 24 | 8 | 19 | 21½ | 88 | 4 |
| A. B. Fargey, do R.R. 2 | do | 17 | 22 | 9 | 18 | 21½ | 87½ | 10 |
| V. & E. Matthew, do R.R. 1 | do | 17½ | 19 | 8 | 19 | 21½ | 85 | 4 |
| C. W. Thompson & Son, Stirling, R.R. 1 | do | 18 | 18 | 8 | 18 | 22½ | 84½ | 4, 2 |
| S. Wallace, Harold, R.R. 1 | do | 15½ | 22 | 9½ | 17 | 19½ | 83½ | 15 |
| M. Shea, Stirling, R. R. 1 | do | 15½ | 18 | 8 | 19 | 20½ | 81 | 15, 14 |
| P. McAvoy, Ivanhoe, R.F.D. | do | 15 | 19 | 9 | 17 | 20½ | 80½ | 4 |
| E. Bailey, Stirling | do | 16½ | 17 | 8 | 18 | 20 | 79½ | 4 |
| Geo. N. Wilson, Stirling, R.R. 3 | do | 17½ | 22 | 9 | 8 | 21 | 77½ | 15 |
| WOLLASTON AGR. SOCIETY. | | | | | | | | |
| *Judge—C. Mallory, Bloomfield.* | | | | | | | | |
| Herb. Moore, The Ridge | O. A. C. 72 | 18½ | 23 | 9 | 19½ | 23 | 93 | |
| D. Maitland, do | do | 17 | 24 | 9 | 19 | 23 | 92 | |
| C. S. Rollins, Coe Hill | Banner | 17 | 23 | 9 | 18 | 23 | 90 | |
| H. Johnson, do | do | 18½ | 23 | 8 | 17 | 23 | 89½ | |
| R. J. Henderson, The Ridge | Abundance | 17½ | 23 | 9 | 18 | 21 | 88½ | |
| Robt. Thomson, do | Banner | 17 | 23 | 7 | 19 | 21¾ | 87¾ | |
| E. Gunter, Coe Hill | do | 15½ | 24 | 9 | 19 | 19½ | 87 | |
| Dan Henderson, The Ridge | do | 16 | 21 | 9¾ | 18½ | 20¾ | 86 | |
| Erwin Moore, Lake | O. A. C. 72 | 16 | 20 | 9½ | 19 | 21 | 85½ | |
| Chas. Muffett, Sr., Coe Hill | Banner | 16 | 20 | 9 | 17 | 23 | 85 | |
| Robt. Blackburn, Coe Hill | do | 16 | 23 | 6 | 18 | 21 | 84 | |
| Chas. Rossau, Glen Alda | do | 15 | 20 | 7 | 18 | 18½ | 78½ | |
| Jno. Leland, Coe Hill | do | 13 | 22 | 7 | 17 | 17 | 76 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| HURON. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| BLYTH AGR. SOCIETY. | | | | | | | | |
| *Judge—J. A. Kernahan, Maxwell.* | | | | | | | | |
| D. Laidlaw, Blyth | Banner | 17½ | 22 | 9 | 18 | 22 | 88½ | |
| J. F. Laidlaw, do | do | 17 | 22 | 9 | 18 | 22 | 88 | 15 |
| R. H. Shortreed, Blyth | do | 15 | 22 | 7 | 15 | 21½ | 80½ | |
| Gray Bros., do | do | 16½ | 17 | 9 | 16 | 21½ | 80 | 1 |
| D. A. Laidlaw, Walton, R.R. 3 | do | 16½ | 20 | 8 | 16 | 19 | 79½ | 2 |
| Jno. S. Scott, Blyth | do | 15 | 22 | 8 | 16 | 18 | 79 | 15 |
| Robt. Medd, Auburn | do | 17 | 10 | 9 | 18 | 22 | 76 | 1 |
| Jno. Barr, Blyth | do | 17 | 16 | 6 | 16 | 20½ | 75½ | 2 |
| R. Richmond, do | Elmhurst | 17 | 20 | 9 | 10 | 20½ | 74½*a* | 11 |
| Jno. Parrott, do | Banner | 15½ | 23 | 6 | 12 | 16½ | 73 | |
| EAST HURON AGR. SOCIETY. | | | | | | | | |
| *Judge—J. A. Kernahan, Maxwell.* | | | | | | | | |
| R. L. Taylor, Brussels | O. A. C. 72 | 18 | 24 | 9 | 20 | 21½ | 92½ | |
| Wm. R. Moses Bluevale, R.R. 2 | Golden Gem | 16½ | 24 | 8 | 18 | 21 | 85½*a* | |
| D. McKinnon, Brussels | O. A. C. 72 | 18½ | 19 | 8 | 17 | 22 | 84½ | 10 |
| Jno. G. Spier, do | do | 18 | 18 | 8 | 18 | 22 | 84 | 11 |
| O. Turnbull & Sons, do | do | 15 | 18 | 8 | 19 | 19 | 79 | 2, 15 |
| W. R. Broadfoot, do R.R. 2 | do | 14½ | 22 | 7 | 18 | 17 | 78½ | 15 |
| R. J. Hoover, do | do | 18 | 10 | 8 | 18 | 20½ | 74½ | 1, 2 |
| Ed. Fulton, do R.R. 2 | do | 16½ | 10 | 8 | 17 | 22½ | 74 | 1, 15 |
| Jno. Bolger, do | do | 17½ | 10 | 7 | 17 | 22 | 73½ | 1, 2 |
| H. Whitfield, do R.R. 3 | do | 17½ | 14 | 6 | 15 | 20½ | 73 | 2 |
| L. E. Cardiff, do | do | 17½ | 5 | 8 | 18 | 22½ | 71 | 1, 2 |
| HOWICK AGR. SOCIETY. | | | | | | | | |
| *Judge—A. E. Myles, Kimberley.* | | | | | | | | |
| Jas. E. Ball, Wroxeter, R.R. 2 | Banner | 16 | 25 | 8 | 20 | 24 | 93 | |
| A. McLaughlin, Gorrie, R.R. 1 | O. A. C. 72 | 17 | 23 | 8 | 20 | 23 | 91 | 15 |
| J. W. Gamble, do | Granary Filler | 18 | 22 | 8 | 18 | 23 | 89 | 1 |
| Lindsay Brown, do R.R. 1 | O. A. C. 72 | 18 | 20 | 9 | 18 | 23 | 88 | 15 |
| R. Wilkin, Palmerston, R.R. | Banner | 14 | 23 | 8 | 19 | 22 | 86 | 15 |
| H. Sparling, Gorrie, R.R. 2 | Swedish Select | 15 | 22 | 8 | 20 | 22¼ | 85¼*a* | |
| G. Brown, do | Banner | 15 | 20 | 8 | 19 | 23 | 85 | 2, 15 |
| A. E. Toner, do | do | 18 | 14 | 8 | 18 | 24 | 82 | 4, 1 |
| A. Kiel, do | do | 16 | 17 | 8 | 17 | 23 | 81 | 2, 15 |
| Jas. Downey, Fordwich, R.R. 2 | O. A. C. 72 | 14 | 23 | 7 | 20 | 14 | 78 | 15 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| KENORA. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| DRYDEN AGR. SOCIETY. | | | | | | | | |
| *Judge—I. F. Metcalfe, Emo.* | | | | | | | | |
| A. J. Gardiner, Eagle River | Gold Rain | 18 | 25 | 7 | 19 | 24 | 91*a* | |
| T. H. Lewis, Oxdrift | do | 18 | 25 | 7 | 19 | 23 | 90*a* | |
| Jno. Fisher, Dryden | Banner | 19½ | 25 | 4 | 18 | 22½ | 89 | |
| D. F. McKenzie, Eagle River | Gold Rain | 18 | 25 | 6 | 18 | 23 | 88*a* | |
| W. W. Howell, Oxdrift | do | 18 | 25 | 3 | 19 | 23 | 86*a* | |
| J. W. Pollard, do | do | 15 | 25 | 5 | 19 | 23 | 85*a* | |
| J. Guthrie, Dryden | Banner | 19½ | 25 | .... | 18 | 20 | 82½ | |
| Geo. Ruete, Minnitaki | Gold Rain | 15 | 24 | 4 | 19 | 21 | 81*a* | |
| Jno. McKay, Dryden | Victory | 17½ | 23 | 5 | 15 | 21½ | 80*a* | 15 |
| F. Goldrup, do | do | 15 | 24 | 5 | 19 | 18 | 79*a* | |
| E. W. Wise, do | do | 17½ | 20 | 5 | 18 | 19½ | 78*a* | 2, 15 |
| Jno. Adams, Oxdrift | Gold Rain | 16 | 25 | .... | 18 | 19 | 76*a* | |
| S. Richardson, do | do | 18 | 10 | 5 | 19 | 23 | 73*a* | 1 |
| KENT. | | | | | | | | |
| EAST KENT AGR. SOCIETY. | | | | | | | | |
| *Judge—E. J. Mullins, Woodslee.* | | | | | | | | |
| F. Cameron, Thamesville | O. A. C. 72 | 19½ | 24 | 9 | 19 | 24½ | 96 | |
| Jno. Miller, do | do | 20 | 23 | 9 | 18 | 24 | 94 | |
| Jas. Winter, do | White Cove | 20 | 24 | 9 | 18 | 23 | 92*a* | |
| W. Cameron, do | Banner | 19 | 20 | 9 | 18 | 25 | 91 | |
| Sam. Holmes, Northwood | White Cove | 19½ | 20 | 9 | 18 | 22 | 86½*a* | |
| Geo. Secord, Thamesville | O. A. C. 72 | 18 | 22 | 8 | 17 | 21 | 86 | |
| H. Hetherington, do | Abundance | 17 | 23 | 8 | 17 | 20½ | 85½ | |
| J. Brislay, Northwood | O. A. C. 72 | 17 | 23 | 8 | 19 | 18 | 85 | |
| R. J. Shankey, Thamesville | do | 18½ | 22 | 8 | 16 | 20½ | 85 | |
| David Winter, Northwood | White Cove | 18½ | 20 | 8 | 15 | 21 | 80½*a* | |
| Robt. Baker, Thamesville | O. A. C. 72 | 16½ | 21 | 7 | 16 | 19½ | 80 | |
| H. H. Buchanan, do | do | 15½ | 20 | 7 | 17 | 17½ | 77 | |
| P. Cameron, do | do | 17 | 15 | 7 | 18 | 19½ | 76½ | |
| Jno. Buchanan, do | Banner | 17 | 22 | 8 | 10 | 19 | 76 | |
| J. C. Harris, do | O. A. C. 72 | 15 | 18 | 7 | 17 | 18½ | 75½ | |
| Robt. Currie, Florence | do | 15 | 15 | 8 | 18 | 19 | 75 | |
| Dan. Buchanan, Thamesville | do | 15 | 17 | 7 | 18 | 18 | 75 | |
| P. Secord, do | do | 15½ | 15 | 8 | 16 | 18 | 72½ | |
| Jos. Schindler, do | Prolific | 16 | 14 | 8 | 16 | 19 | 71*a* | |
| Isaac Wardell, Ridgetown | O. A. C. 72 | 14½ | 15 | 7 | 16 | 18 | 70½ | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| KENT.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| WALLACEBURG AGR. SOCIETY. | | | | | | | | |
| *Judge—J. G. McPharlin, Essex, R.R. 3.* | | | | | | | | |
| D. L. McCreary, Wallaceburg, R.R. 2 | Am. Banner | 18 | 22 | 9 | 20 | 23 | 92 | |
| Jos. Coveny, Electric | do | 18 | 22 | 8½ | 19½ | 23 | 91 | 14 |
| Geo. W. Arnold, Wallaceb'g, R.R. 3 | do | 18 | 19 | 8½ | 20 | 22 | 87½ | 15, 14, 8 |
| W. McCarrol, do R.R. 2 | do | 17¼ | 20 | 8 | 20 | 22 | 87¼ | 15, 14 |
| A. E. Fry, do R.R. 1 | do | 18 | 20½ | 9 | 17½ | 22 | 87 | 14 |
| H. Handsor, Electric, R.R. 1 | O. A. C. 72 | 17 | 21 | 9 | 18 | 21½ | 86½ | |
| C. H. Crowe, Wallaceburg, R.R. 2 | Am. Banner | 17¾ | 19 | 7¼ | 20 | 22 | 86 | |
| D. Crawford, Electric | do | 17 | 20 | 8¼ | 18 | 22 | 85¼ | 15 |
| Orrie Crowe, Wallaceburg, R.R. 5 | do | 17¼ | 18 | 7¼ | 20 | 22½ | 85 | 15 |
| W. C. Gordon, Electric | do | 17 | 18 | 8 | 19 | 22½ | 84½ | 15 |
| J. M. Langstaff, Tupperville, R.R. 3 | do | 16¾ | 15½ | 8 | 18 | 22½ | 80¾ | 1, 14, 15 |
| D. Coveny, Electric | do | 17¾ | 10 | 8¾ | 18 | 22¾ | 77¼ | 1 |
| LAMBTON. | | | | | | | | |
| EAST LAMBTON AGR. SOCIETY. | | | | | | | | |
| *Judge—E. J. Mullins, Woodslee.* | | | | | | | | |
| Jno. McCormick, Watford, R.R. 5 | O. A. C. 72 | 20 | 24 | 8 | 18 | 24 | 94 | |
| E. A. Kidd, do R.R. 3 | Banner | 20 | 19 | 9 | 18 | 25 | 91 | |
| S. B. Chambers, do R.R. 5 | O. A. C. 72 | 20 | 20 | 8 | 17 | 25 | 90 | |
| Jno. Zavitz, Alvinston, R.R. 7 | Banner | 18 | 23 | 9 | 18 | 20 | 88 | |
| S. W. Edwards, Watford | do | 20 | 20 | 9 | 16 | 22 | 87 | |
| Jas. A. Hair, do | O. A. C. 72 | 19 | 17 | 8 | 18 | 23 | 85 | |
| E. H. Shirley, do R.R. 3 | Silver Mine | 19 | 18 | 9 | 18 | 22 | 84*a* | |
| C. E. Janes, do R.R. 2 | Bumper King | 19 | 20 | 8 | 18 | 19 | 82*a* | |
| A. W. Griffith, Alvinston, R.R. 7 | Banner | 19 | 18 | 8 | 14 | 23 | 82 | |
| W. Armeth, Watford, R.R. 3 | do | 17 | 20 | 8 | 17 | 18 | 80 | |
| W. W. Taylor, Alvinston, R.R. 7 | do | 19 | 18 | 8 | 15 | 19 | 79 | |
| R. Melton, do | do | 17 | 15 | 8 | 12 | 20 | 72 | |
| PLYMPTON AND WYOMING. | | | | | | | | |
| *Judge—Robt. Berry, St. Mary's, R.R. 1.* | | | | | | | | |
| Jas. Bryson, Wyoming, R.R. 2 | Banner | 18 | 25 | 8 | 18 | 23½ | 92½ | |
| C. F. Smith, do | do | 18½ | 24 | 8 | 18 | 23 | 91½ | |
| D. Dewar, do | do | 17½ | 21 | 9½ | 20 | 23 | 91 | 15 |
| Thos. Anderson, do R.R. 3 | do | 18 | 23 | 9 | 18 | 22 | 90 | |
| E. Patton, Camlachie | O. A. C. 72 | 17 | 24½ | 9 | 19 | 19½ | 89 | 15 |
| F. Jardine, do | Banner | 19½ | 23 | 7½ | 16 | 22½ | 88½ | 15, 14 |
| Joseph Bryson, Wyoming | do | 16½ | 22 | 9 | 17 | 21 | 85½ | |
| R. S. Jardine, Camlachie, R.R. 2 | Abundance | 17½ | 24 | 8½ | 12½ | 22 | 84½ | 15 |
| Roy, Jardine, Wyoming, R.R. 2 | Banner | 16 | 22 | 7½ | 17½ | 21 | 84 | |
| Wm. Simpson, do | do | 15 | 22½ | 7½ | 8 | 21 | 74 | 15, 14 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| LANARK. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| LANARK VILLAGE AND BATHURST AGR. SOCIETY. | | | | | | | | |
| *Judge—S. H. Treverton, 155 Moira St., Belleville.* | | | | | | | | |
| W. S. McIlquham, Lanark, | Banner | 18 | 24 | 8 | 19 | 22 | 91 | |
| Jas. Blair, do R.R. 1. | do | 17½ | 23 | 9 | 18 | 23 | 90½ | |
| T. C. Montgomery, do | do | 18½ | 22 | 9 | 18 | 22 | 89½ | |
| Wm. Montgomery, do | do | 17 | 22 | 9 | 18 | 23 | 89 | |
| Arch. McNichol, do R.R. 1. | Abundance | 17 | 22 | 9 | 18 | 21 | 87 | |
| Robt. Stewart, do R.R. 2. | E. Norman | 17½ | 22 | 9 | 18 | 21¼ | 85¾*a* | |
| W. J. Rothwell, do R.R. 1. | Banner | 17½ | 21 | 8 | 18 | 21 | 85½ | 4 |
| T. J. Davidson, do R.R. 1. | O. A. C. 72 | 17 | 20 | 9 | 17 | 22 | 85 | |
| A. A. Ireton, Almonte, R.R. 5. | Banner | 15 | 19 | 8 | 17 | 22 | 81 | |
| Jas. M. Warren, Balderson, R.R. 1 | do | 13 | 20 | 7 | 18 | 18 | 76 | |
| Wm. Graham, Lanark | do | 14½ | 18 | 8 | 15 | 20 | 75½ | 4 |
| LEEDS. | | | | | | | | |
| BROCKVILLE AGR. SOCIETY. | | | | | | | | |
| *Judge—G. W. Davidson, Kemptville.* | | | | | | | | |
| Lloyd Green, Soperton | O. A. C. 72 | 18 | 24 | 9 | 18 | 22 | 91 | 15, 14 |
| J. M. Henderson, Athens | Mam. Cluster | 17 | 20 | 9 | 20 | 23½ | 89½ | 5, 4 |
| Geo. E. Jackson, Lyn | Banner | 16 | 22 | 8 | 18½ | 22 | 86½ | 14 |
| W. J. Bolton, Bellamy, R.R. 1 | do | 17 | 22 | 8 | 17 | 22 | 86 | 5 |
| H. J. Willows, Lyn | do | 16 | 20 | 8 | 19 | 21 | 84 | |
| J. S. Moore, Bellamy, R.R. 1 | do | 14½ | 20 | 8 | 18 | 22 | 82½ | 15, 10, 2 |
| J. W. Stewart, Lyn | do | 16 | 17½ | 7 | 17½ | 22½ | 80½ | 5, 17, 10 |
| Dr. H. Clark, Brockville | Leader | 14 | 18 | 8 | 19½ | 22½ | 80*a* | 10,14, 15,5 |
| Jos. Hudson & Son, Lyn | Banner | 14½ | 19 | 9 | 18 | 19 | 79½ | |
| H. H. McNeil, Charleston | do | 14½ | 18 | 7 | 17½ | 22 | 79 | 15, 14 |
| A. J. Bushfield, Lyn | O. A. C. 72 | 15 | 18 | 8 | 16 | 20½ | 77½ | 5, 4, 10 |
| LANSDOWNE AGR. SOCIETY. | | | | | | | | |
| *Judge—S. H. Treverton, Belleville.* | | | | | | | | |
| D. B. Johnston, Lansdowne | O. A. C. 72 | 17 | 22 | 8½ | 19 | 23½ | 90 | 4, 15 |
| F. Doak, do | Abundance | 17½ | 22 | 8 | 19 | 23 | 89½ | 10, 4 |
| Wm. Roth, do | O. A. C. 72 | 17 | 23 | 9 | 18 | 22 | 89 | 15 |
| J. B. Wilson, do | Granary Filler | 17 | 24 | 9 | 16 | 22 | 88 | 15 |
| Robt. Shields, do | Banner | 16 | 21 | 8 | 19 | 23 | 87 | 15, 4 |
| Wm. B. Steacy, do | O. A. C. 72 | 16 | 21 | 9 | 18½ | 22 | 86½ | 10, 4 |
| H. McD. Gray, do | do | 16 | 20 | 8 | 18½ | 22 | 84½ | 4, 15 |
| R. Breckenridge, do | do | 14½ | 20 | 8 | 19 | 22 | 83½ | 10, 15, 4 |
| Geo. A. Steacy, do | do | 16 | 20 | 8 | 17 | 22 | 83 | 2, 10, 14 |
| W. Landon, do | Abundance | 15½ | 18½ | 7 | 19 | 22½ | 82½ | 10, 4, 15 |
| Geo. A. Loney, Warburton | O. A. C. 72 | 16 | 21 | 8 | 16 | 21 | 82 | 10, 4, 15 |
| O. W. Landon, Lansdowne | do | 16 | 22 | 5 | 18 | 19½ | 80½ | 15 |
| Thos. Steacy, do | Abundance | 15½ | 19 | 8 | 18 | 21 | 81½ | 10, 4, 15 |
| M. Kyes, do | Golden Fleece | 16 | 19 | 7 | 18 | 22 | 80*a* | 4, 14 |

NOTE—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| LEEDS.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| LOMBARDY AGR. SOCIETY. | | | | | | | | |
| *Judge—S. H. Treverton, Belleville.* | | | | | | | | |
| H. E. Joynt, Lombardy | Banner | 17½ | 21 | 9 | 19 | 21½ | 88 | |
| F. H. South, Smith's Falls, R.R. 4. | do | 17 | 22 | 9 | 17 | 22½ | 87½ | |
| M. Covell, Lombardy, R.R. 1. | do | 17 | 21 | 9 | 18 | 22 | 87 | |
| A. Bisonette, do | do | 16½ | 21 | 9 | 17 | 22½ | 86 | |
| C. Patterson, do | Granary Filler | 16 | 19 | 9 | 18 | 23½ | 85½ | 4 |
| R. Miller, do | do | 16 | 20 | 8 | 18 | 22½ | 84½ | |
| E. J. O'Meara, do | O. A. C. 72 | 16 | 16 | 9 | 19 | 24 | 84 | |
| W. J. Looby, do | Am. Worthy | 16 | 20 | 9 | 18 | 22 | 83*a* | |
| A. Covell, do | Banner | 17 | 20 | 9 | 15 | 22 | 83 | |
| Ed. Joynt, do | do | 17 | 18 | 9 | 18 | 20½ | 82½ | 4 |
| Jno. Breen, do | do | 15 | 20 | 9 | 17 | 21 | 82 | |
| D. Joynt, do | White Wave | 15 | 21 | 8 | 18 | 21½ | 81½*a* | 2 |
| H. Chalmers, Smith's Falls | Banner | 16 | 18 | 7½ | 17 | 22 | 80½ | 4 |
| LENNOX. | | | | | | | | |
| LENNOX AGR. SOCIETY. | | | | | | | | |
| *Judge—Milton W. Young, Woodrous.* | | | | | | | | |
| Rockwell, Parks, Napanee | Banner | 18½ | 22 | 8 | 19 | 23½ | 91 | 4 |
| R. F. Hawley, do | do | 17 | 23½ | 8½ | 19 | 22½ | 90½ | |
| F. H. Henderson, do R.R. 7. | do | 17 | 24 | 8 | 16 | 22½ | 87½ | |
| M. Hawley, do | do | 17 | 20 | 8 | 19 | 23 | 87 | 5, 4 |
| A. M. Burgess, do | O. A. C. 72 | 15½ | 24 | 7 | 19 | 20½ | 86 | |
| L. B. Y. Mellow, Bath, R.R. 1. | Banner | 16 | 20 | 8½ | 18 | 22½ | 85 | 10, 14 |
| R. Milling, Napanee, R.R. 6. | do | 16 | 23 | 8 | 16 | 21 | 84 | |
| G. W. Johnston, do R.R. 3. | O. A. C. 72 | 16 | 17 | 8 | 18 | 22 | 81 | 5 |
| D. R. Sharpe, do R.R. 2. | Banner | 17 | 15 | 8 | 17 | 23½ | 80½ | |
| LINCOLN. | | | | | | | | |
| CLINTON AND LOUTH AGR. SOCIETY. | | | | | | | | |
| *Judge—W. F. B. Switzer, Streetsville.* | | | | | | | | |
| S. H. Culp, Beamsville | O. A. C. 72 | 17 | 24 | 8 | 19 | 23 | 91 | |
| Wm. Boughner, do | do | 18 | 23 | 8 | 19 | 22½ | 90½ | |
| A. W. Culp, do | do | 17 | 23 | 8 | 18½ | 23 | 89½ | |
| J. Richards, do | do | 17 | 23 | 8 | 18 | 23 | 89 | |
| Bert Sam, do | do | 17 | 22½ | 9 | 17 | 23 | 88½ | |
| W. S. Eborall, do | do | 17 | 20 | 9 | 19 | 23 | 88 | |
| J. D. Grobb, do | Am. Banner | 16 | 23 | 7 | 19 | 21 | 86 | |
| D. H. Moyer, do R.R. 2. | Silver King | 15 | 23 | 8 | 19 | 20 | 83*a* | |
| W. Wilcox, do R.R. 2. | Silver Mine | 15 | 18 | 8 | 16 | 20 | 75*a* | 15, 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| LINCOLN.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| MONCK AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. Boyd, Pickering, R.R. 2.* | | | | | | | | |
| Jno.E. Crosby, Wellandport, R.R. 2 | O. A. C. 72 | 16½ | 23 | 8 | 19 | 22½ | 89 | |
| L. Travers, do R.R. 1 | do | 16 | 21½ | 7½ | 18½ | 22½ | 86 | 10, 14, 15 |
| H. Cohoe, do R.R. 1 | do | 14½ | 22½ | 7½ | 19 | 22 | 85½ | 15 |
| A. Cohoe, do | do | 14½ | 21 | 8½ | 19 | 22 | 85 | 10, 15, 14 |
| Wm. E. Heaslip, do | Rennie's E.Yielder. | 15½ | 20 | 8 | 19 | 22 | 82½*a* | 15, 14 |
| Jos. Hill, do R.R. 3 | do do | 15 | 22 | 8 | 17½ | 21¾ | 82¼ | 15, 14 |
| N. Shafley, do | O. A. C. 72 | 14 | 19½ | 8½ | 19 | 21 | 82 | 2, 15, 10, 14 |
| A. Kennedy, St. Anns, R.R. 1 | do | 14½ | 20 | 7 | 19 | 21 | 81½ | 15, 14 |
| O. McPherson, do | do | 14 | 20 | 7 | 19 | 21 | 81 | 15, 14 |
| P. Misener, Wellandport, R.R. 1 | Silver Mine | 14½ | 19 | 8 | 19 | 22½ | 81*a* | 7, 15, 14, 4 |
| S. Heaslip, do R.R. 3 | Rennie's E.Yielder. | 14½ | 20 | 7½ | 19 | 21½ | 80½*a* | 15 |
| M. H. Coyne, Bismarck | O. A. C. 72 | 13 | 20 | 6 | 12 | 20½ | 71½ | 14, 15 |
| NIAGARA TOWN AND TOWNSHIP AGR. SOCIETY. | | | | | | | | |
| *Judge—W. F. B. Switzer, Streetsville.* | | | | | | | | |
| J. J. Craise, Niagara-on-Lake | Granary Filler | 17 | 22½ | 9 | 19 | 23 | 90½ | |
| N. Stevens, Virgil | O. A. C. 72 | 17 | 23 | 8 | 19 | 22½ | 89½ | |
| W. H. Sheppard, Niagara-on-the Lake, R.R. 1 | Granary Filler | 17 | 23 | 9 | 18 | 22 | 89 | |
| C. H. Bufton, St. Catharines, R.R. 4 | Am. Banner | 17 | 22½ | 8 | 19 | 22 | 88½ | 15 |
| R.R.Dawson, Niagara-on-the-Lake, R.R. 2 | Siberian | 17 | 23¼ | 8 | 19 | 23 | 88¼*a* | |
| E. P. Bradt, do R.R. 2 | Banner | 17 | 22 | 8 | 19 | 22 | 88 | |
| R. Lambert, do R.R. 2 | Am. Banner | 16 | 23 | 9 | 18 | 21 | 87 | |
| Chas. Knox, do R.R. 2 | Early Yielder | 17 | 20 | 8 | 18 | 22 | 83*a* | 2 |
| A. Cooper, do R.R. 1 | Imp. Banner | 15 | 22 | 8 | 18 | 19 | 82 | |
| J. D. Cooper, do R.R. 1 | do | 17 | 20 | 8 | 17 | 20 | 82 | 15 |
| T. E. Hiscott, do R.R. 2 | Am. Banner | 17 | 19 | 8 | 18 | 19½ | 81½ | 15, 14 |
| R. Shaw, do R.R. 2 | do | 14 | 22 | 8 | 18 | 18 | 80 | 14 |
| L. H. Collard, St. Catharines, R.R. 4 | Abundance | 14 | 22 | 7 | 16 | 20½ | 79½ | 15 |
| Percy Lees, Niagara-on-the-Lake | Am. Banner | 15 | 20 | 7 | 18 | 19 | 79 | 15 |
| Jas. W. Hope, do | Banner | 14 | 20 | 8 | 16 | 19 | 77 | 15 |
| MANITOULIN. | | | | | | | | |
| GORE BAY AGR. SOCIETY. | | | | | | | | |
| *Judge—Robt. Berry, St. Mary's, R.R. 1.* | | | | | | | | |
| Jno. W. Best, Gore Bay | Banner | 17½ | 22⅔ | 7½ | 18 | 22 | 87½ | 15 |
| Jno. W. Kinney, do | O. A. C. 72 | 17½ | 24 | 8 | 15 | 21½ | 86 | 15 |
| Geo. Bajerow, do | Banner | 14½ | 23 | 9 | 19 | 19½ | 85 | 14 |
| Arch. Campbell, Foxey | do | 15½ | 23½ | 9 | 17 | 19½ | 84½ | 15 |

NOTE.—The figures in brackets at the top are maximum possible scores

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| MANITOULIN.—*Continued* | | [10] | [25] | [10] | [20] | [25] | [100] | |
| GORE BAY AGR. SOCIETY.—*Con.* | | | | | | | | |
| Chas. Burt, Gore Bay | Banner | 16 | 25 | 8 | 16 | 19 | 84 | 15 |
| H. Beck, Foxey | do | 16½ | 23½ | 5 | 14 | 21½ | 80½ | 15 |
| Geo. Willett, Gore Bay | do | 16 | 22 | 5 | 14½ | 22 | 79½ | 15 |
| H. Witty, Foxey | do | 14½ | 18 | 8½ | 15 | 19½ | 75½ | 15, 14 |
| J. Wm. Strain, do | do | 14½ | 24 | 6½ | 10 | 20 | 75 | 15 |
| Sam'l Coburn, Gore Bay | do | 14½ | 15½ | 8 | 16 | 20½ | 74½ | 15 |
| MIDDLESEX. | | | | | | | | |
| CARADOC AGR. SOCIETY. | | | | | | | | |
| *Judge—R. H. Harding, Thorndale.* | | | | | | | | |
| Duncan McNeil, Strathroy, R.R. 1 | O. A. C. 72 | 17½ | 24 | 8 | 20 | 23 | 92½ | |
| D. McCallum, Mt. Brydges, R.R. 2 | do | 18 | 23½ | 8½ | 18½ | 23 | 91½ | |
| D. Campbell, do | do | 17½ | 23½ | 7 | 19 | 22½ | 89½ | |
| D. A. McNeil, Strathroy, R.R. 1 | do | 16½ | 23 | 7 | 20 | 22½ | 89 | |
| Jno. S. Walker, Mt. Brydges, R.R. 2 | Banner | 15½ | 24 | 7 | 20 | 21 | 87½ | |
| Robt. E. Myles, do R.R. 4 | O. A. C. 72 | 15 | 25 | 8½ | 17½ | 21 | 87 | |
| C. M. Troth, do R.R. 1 | do | 15 | 24 | 8 | 17 | 21 | 85 | |
| Alex. Lamont, do R.R. 2 | do | 15 | 23 | 7 | 19 | 20½ | 84½ | |
| M. S. Leitch, Strathroy, R.R. 1 | Banner | 16½ | 16 | 7 | 18 | 23 | 80½ | 11 |
| M. Bateman, Muncey | Irish Victor | 16 | 24 | 5 | 15 | 22½ | 80½*a* | |
| H. W. Weld, Delaware | O. A. C. 72 | 17½ | 12 | 8 | 18 | 24½ | 80 | |
| DORCHESTER AGR. SOCIETY. | | | | | | | | |
| *Judge—R. H. Harding, Thorndale.* | | | | | | | | |
| Sam'l Binding, Mossley, R.R. 2 | O. A. C. 72 | 16½ | 23 | 9 | 20 | 24 | 92½ | |
| Andrew Irwin, Dorchester | do | 18 | 24 | 8 | 18 | 24 | 92 | |
| Geo. Brady, do R.R. 2 | do | 18 | 24 | 5 | 20 | 23½ | 90½ | |
| Geo. Boxall, Mossley, R.R. 2 | do | 18½ | 25 | 5 | 18 | 23½ | 80 | |
| H. Connor, do R.R. 2 | do | 18 | 25 | 5½ | 18 | 23 | 89½ | |
| A. E. Jackson, do R.R. 1 | do | 16½ | 22 | 6 | 16 | 23 | 83½ | |
| D. Cornish, do R.R. 2 | do | 19½ | 12 | 8 | 19½ | 24 | 83 | 2 |
| C. Beecham, do R.R. 2 | do | 17 | 20 | 7 | 17 | 21 | 82 | |
| Chas. Connor, Dorchester, R.R. 2 | Abundance | 18 | 25 | 8 | 5 | 23 | 79 | |
| Sam'l Demaray, Mossley, R.R. 2 | Farmer's Friend | 19 | 17 | 8 | 12 | 24 | 78*a* | 2 |
| Jos. Johnston, do | Banner | 18½ | 7 | 9 | 18 | 24 | 76½ | 10, 2 |
| Elgin Robins, Harrietsville | | 14 | 24 | 9 | 10 | 21 | 76*a* | |
| Lorne Beecham, Mossley, R.R. 2 | O. A. C. 72 | 17 | 12 | 6 | 17 | 22 | 74 | 2 |
| D. Demaray, do R.R. 1 | | 18 | 10 | 8½ | 15 | 23 | 72½*a* | 2 |
| E. Cornish, do R.R. 1 | | 17 | 14 | 8 | 10 | 23 | 70*a* | 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

# RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

## OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| MIDDLESEX.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| EAST MIDDLESEX AGR. SOCIETY. | | | | | | | | |
| *Judge—R. H. Abraham, Chatham.* | | | | | | | | |
| A. Cornish, Wilton Grove, R.R. 2 | Banner | 18 | 23 | 9 | 19 | 23 | 92 | |
| Jas. Murray, do R.R. 1 | do | 17½ | 21 | 9 | 17 | 23 | 87½ | |
| Geo. H. Riddle, do R.R. 1 | do | 17 | 19½ | 9 | 17½ | 23 | 86 | |
| A. Beattie, do ..... | do | 17 | 17 | 9 | 18½ | 22½ | 84 | 10 |
| N. Anderson, do R.R. 2 | do | 16½ | 15½ | 8½ | 16½ | 22½ | 79½ | 10 |
| C. Milson, do R.R. 2 | do | 17 | 10 | 9 | 17 | 23 | 76 | 2 |
| J. B. Nichol, do R.R. 2 | ..... | 14 | 16½ | 8 | 16 | 22 | 74½ | |
| Geo. B. Laidlaw, do R.R. 2 | Banner | 16 | 15 | 8 | 16 | 21 | 76 | |
| Thos. Beattie, do R.R. 1 | do | 16½ | 10 | 8½ | 18 | 22 | 75 | 2 |
| D. Jackson, do R.R. 1 | do | 16 | 10 | 8 | 17½ | 23 | 74½ | 2 |
| Geo. Riddle, do R.R. 1 | do | 16 | 10 | 8 | 18 | 22 | 74 | 1 |
| NORTH MIDDLESEX AGR. SOCIETY. | | | | | | | | |
| *Judge—R. H. Abraham, Chatham.* | | | | | | | | |
| A. E. Rosser, Ailsa Craig, R.R. 1 | O. A. C. 72 | 17 | 23 | 9 | 19 | 23 | 91 | |
| Jno. D. McEwan, Denfield, R.R. 3 | Banner | 17 | 22 | 9 | 18 | 23 | 89 | |
| Jas. A. Smith, Parkhill, R.R. 6 | do | 17 | 23 | 9 | 17 | 22 | 88 | |
| R. McAlpine, do | do | 16½ | 22 | 7 | 15 | 23 | 83½ | |
| D. McArthur, do | do | 17½ | 18 | 8 | 17½ | 22 | 83 | |
| Charlotte Smith, Clandeboye, R.R. 1 | do | 17 | 20 | 9 | 15 | 21 | 82 | |
| D. Stewart, Ailsa Craig, R.R. 1 | do | 16 | 16 | 8 | 18 | 22 | 80 | |
| Jas. C. Shepley, do R.R. 1 | do | 17 | 16½ | 8 | 16 | 21 | 78½ | |
| Ed. S. Hughes, do R.R. 2 | do | 16 | 20 | 7 | 14 | 21 | 78 | |
| E. McAlpine, Ailsa Craig, R.R. 3 | do | 15 | 14 | 7½ | 14 | 20 | 70½ | 10 |
| Leitch Bros., Parkhill, R.R. 6 | do | 15 | 12 | 7 | 14 | 22 | 70 | 1 |
| UNITED INDIAN AGR. SOCIETY. | | | | | | | | |
| *Judge—R. H. Abraham, Chatham.* | | | | | | | | |
| P. Powless, Muncey | Banner | 17½ | 20½ | 9½ | 19½ | 24 | 91 | |
| D. Dolson, Sr., do | do | 16½ | 23 | 9 | 19 | 23 | 90½ | |
| Enoch Hill, do | do | 17 | 20 | 9 | 19 | 23 | 88 | |
| Jno. Sutherland, do | do | 17 | 20½ | 8½ | 19 | 22½ | 87½ | |
| Geo. French, Melbourne | do | 17 | 20 | 9 | 18 | 23 | 87 | |
| Thos. Somers, Muncey | O. A. C. 72 | 16 | 18 | 9 | 18 | 22 | 83 | |
| S. P. Miskokomon, do | Banner | 17 | 12 | 9 | 19 | 23 | 80 | 10 |
| Jos. Young, Christina | do | 16½ | 15 | 7 | 18 | 22 | 78½ | 12 |
| Noah Sickles, Sr., Muncey | do | 16 | 17 | 8 | 16¼ | 21 | 78¼ | |
| A. Webster, Southwold | do | 16 | 17 | 8 | 17 | 20 | 78 | |
| Jno. A. Riley, Christina | do | 16 | 16 | 8 | 17 | 20 | 77 | |
| A. Antone, Southwold | do | 16 | 18 | 4 | 17½ | 21 | 76½ | |
| Geo. Chrysler, Christina | do | 16½ | 14 | 8 | 16 | 22 | 76½ | 10 |
| Jos. Antone, Southwold | do | 16 | 16 | 8 | 15 | 21 | 76 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| MUSKOKA. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| GRAVENHURST AND MUSKOKA AGR. SOCIETY. | | | | | | | | |
| *Judge—D. English, Burketon, R.R. 3.* | | | | | | | | |
| S. Polmateer, Gravenhurst | Reg. Banner | 17 | 16 | 6 | 20 | 22 | 81 | 10, 14 |
| W. H. Tincombe, do | O. A. C. 72 | 14½ | 20 | 8 | 18 | 20 | 80½ | |
| B. Laycock, do | Yel. Russian | 15½ | 18 | 7 | 18 | 21½ | 80 | 10, 4 |
| Robt. G. Young, do | O. A. C. 72 | 16½ | 19 | 6 | 18 | 20 | 79½ | 15, 10 |
| Josh. Short, do | Banner | 15 | 18 | 8 | 18 | 20 | 79 | 10, 15, 11 |
| W. Ruttan, do | do | 18 | 17 | 7 | 15 | 21½ | 78½ | 15, 10 |
| Robt. McKay, do | do | 17 | 18 | 6 | 17 | 20 | 78 | 6 |
| H. Hammond, do | do | 13 | 18 | 8 | 16 | 19 | 74 | 7, 10 |
| C. E. Laycock, do | O. A. C. 72 | 14 | 18 | 7 | 18 | 16 | 73 | 7, 14 |
| O. E. Taylor, Reay | Abundance | 13 | 18 | 8 | 18 | 16 | 73 | 10 |
| MEDORA AND WOOD AGR. SOCIETY. | | | | | | | | |
| *Judge—Geo. McKague, Woodville, R.R. 4.* | | | | | | | | |
| Chas. F. McCulley, Port Carling | O. A. C. 72 | 16 | 23 | 9 | 19 | 20 | 87 | |
| Jno. Hutton, Hutton House P.O. | Victor | 17 | 23 | 9 | 19 | 20½ | 86½*a* | 10 |
| R. C. Butler, Point Kaye | Banner | 16½ | 22½ | 7 | 19 | 20½ | 85½ | 15 |
| C. H. Davidson, Brackenrig | O. A. C. 72 | 15½ | 23 | 7½ | 18 | 20½ | 84½ | 15, 7 |
| Wm. Chambers, Bardsville | Banner | 15½ | 24 | 8½ | 16 | 19½ | 83½ | |
| H. J. Foulkes, Brackenrig | Victor | 15½ | 24½ | 9 | 17½ | 18½ | 83*a* | |
| L. Butler, Point Kaye | Banner | 15 | 22 | 7½ | 18 | 20 | 82½ | |
| Thos. Aikens, Port Carling | Reg. Am. Banner | 14½ | 21 | 8 | 19 | 19½ | 82 | 10 |
| Jno. Davidson, Brackenrig | Victor | 16 | 21 | 9 | 18 | 19½ | 81½*a* | 15 |
| F. W. Knight, do | O. A. C. 72 | 13 | 24½ | 8 | 19 | 17 | 81½ | |
| Chas. Donald, Port Carling | Banner | 18 | 16 | 7 | 19 | 20½ | 80½ | 10, 1, 7 |
| G. Frazer, Brackenrig | Victor | 18 | 16 | 9 | 18 | 21 | 80*a* | 15, 2 |
| Arch. Mitchell, Bardsville | Banner | 17½ | 15 | 8 | 17½ | 21 | 79 | 1, 15 |
| W. J. Boyce, Brackenrig | | 16 | 19 | 8 | 18 | 20 | 79*a* | 7, 2 |
| W. S. Mahon, Port Carling | Banner | 14 | 17 | 9 | 19 | 19 | 78 | 10, 11 |
| W. K. Foreman, do | do | 14½ | 17 | 7 | 18 | 19½ | 76 | 10, 15 |
| NORTH MUSKOKA AGR. SOCIETY. | | | | | | | | |
| *Judge—D. English, Burketon, R.R. 3.* | | | | | | | | |
| Wm. M. Sinclair, Huntsville, Box 257 | Banner | 19 | 22 | 9 | 18 | 23 | 91 | 4 |
| H. Young, Huntsville | do | 20 | 20 | 7 | 18 | 23 | 88 | |
| T. Rowland Hill, Hillside | O. A. C. 72 | 16 | 22 | 7 | 17 | 20½ | 82½ | |
| Jno. Patterson, Huntsville | Banner | 16½ | 20 | 8 | 16 | 20½ | 81 | 15, 12, 6 |
| J. D. Scott, do Box 276. | do | 17 | 18 | 7 | 17 | 21 | 80 | |
| Jos. E. May, Ravenscliffe | Siberian | 16 | 20 | 7 | 17 | 21¾ | 79¾*a* | 11, 15 |
| A. Cockram, Huntsville | Banner | 15½ | 20 | 7 | 17 | 20 | 79½ | |
| R. J. S. Hill, Hillside | do | 16 | 18 | 8 | 17 | 20 | 79 | 15 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| MUSKOKA.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| NORTH MUSKOKA AGR. SOC.—*Con.* | | | | | | | | |
| Bigwin Farm Ltd., Huntsville | Banner | 14½ | 18 | 8 | 18 | 18 | 76½ | 15, 10 |
| Hugh T. Hill, Hillside | O. A. C. 72 | 16½ | 18 | 7 | 15 | 18½ | 75 | |
| Chas. Kitchen, Huntsville, Box 105 | do | 12 | 17 | 7 | 17 | 20 | 73 | 15, 4 |
| Jno. Turnbull, Canal | do | 13½ | 18 | 7 | 15 | 19 | 72½ | 12 |
| S. Martin, Ravenscliffe | Siberian | 14 | 20 | 6 | 16 | 18 | 72*a* | 11 |
| Jno. Pleace, Canal | O. A. C. 72 | 13 | 16 | 7 | 17 | 19 | 72 | 4, 15 |
| SOUTH MUSKOKA AGR. SOCIETY. | | | | | | | | |
| *Judge—F. W. Rilance, Beaverton.* | | | | | | | | |
| Chas. H. Kaye, Bracebridge | O. A. C. 72 | 18 | 25 | 8 | 18 | 23 | 92 | |
| H. L. Goltz, Bardsville | do | 17 | 24 | 8 | 19 | 23 | 91 | |
| J. Byron Kaye, Bracebridge | Mam. Cluster | 17½ | 24 | 9 | 18 | 21 | 89½ | |
| P. C. Kaye, do | O. A. C. 72 | 16 | 24 | 8 | 19 | 22 | 89 | |
| H. E. Beaumont, do | do | 15 | 23 | 9 | 20 | 21 | 88 | 10 |
| Campbell & Richard, Allport | do | 17 | 23 | 7 | 17 | 21½ | 85½ | 10 |
| Wm. Naismith, Falkenburg | do | 15 | 24 | 7 | 18 | 21 | 85 | |
| R. Dinner, Ziska | Victory | 15 | 22 | 9 | 17 | 21 | 82*a* | 10, 15 |
| A. J. Goltz, Bardsville | Liberty | 15½ | 22 | 9 | 16 | 21 | 81½*a* | 1 |
| Henry Richards, Bracebridge | O. A. C. 72 | 16 | 22 | 5 | 17 | 21 | 81 | 1 |
| STEPHENSON AND WATT AGR. SOC. | | | | | | | | |
| *Judge—F. W. Rilance, Beaverton.* | | | | | | | | |
| N. Hammell, Utterson, R.R. 1 | Banner | 17 | 24 | 10 | 19 | 23 | 93 | 15 |
| H. Rawson, Raymond | do | 17½ | 24 | 9 | 19 | 22 | 91½ | |
| Geo. Hammell, Utterson, R.R. 1 | do | 16 | 24 | 10 | 19 | 22 | 91 | |
| Chas. Nichol, Port Sydney | do | 17 | 24 | 9 | 19 | 21½ | 90½ | |
| Jno. McNicol, Allensville | O. A. C. 72 | 17½ | 24 | 8 | 18 | 22 | 89½ | |
| Leslie Bunn, Ullswater | Reg. Banner | 17 | 24 | 9 | 19 | 20 | 89 | |
| A. Kay, Port Sydney | Abundance | 17 | 24 | 8 | 18 | 21 | 88 | |
| P. Hammell, Raymond | Banner | 16½ | 23 | 8 | 19 | 21 | 87½ | |
| W. D. Somerset, Port Sydney | Am. Banner | 17 | 22 | 8 | 18 | 22 | 87 | |
| H. Creasor, Ullswater | O. A. C. 72 | 15 | 20 | 9 | 20 | 21 | 85 | 2 |
| W. Hamilton, Utterson, R.R. 1 | Banner | 17 | 22 | 9 | 16 | 20 | 84 | 1 |
| Wm. Kirbyson, Ufford | Victor | 15 | 20 | 9 | 18 | 20 | 80*a* | 1, 2 |
| Jno.M. Billingsley, Utterson, R.R. 1 | Banner | 15 | 20 | 9 | 17 | 19 | 80 | |
| L. Johnston, Port Sydney | do | 14 | 23 | 5 | 19 | 19 | 80 | |
| W. A. Suffern, Utterson, R.R. 1 | do | 16 | 20 | 6 | 17 | 20½ | 79½ | |
| Thos. Graham, Raymond | do | 17 | 15 | 6 | 18 | 22 | 78 | 1 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| NIPISSING. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| BONFIELD AGR. SOCIETY. | | | | | | | | |
| *Judge—Hy. Knight, Jr., S. S. Marie, R.R. 1.* | | | | | | | | |
| J. H. Boissonneault, Grand Desert.. | O. A. C. 72..... | 17 | 25 | 9½ | 20 | 21 | 92½ | |
| Geo. Proulx, Bonfield..... | do ..... | 17 | 4 | 8 | 20 | 22 | 91 | |
| Jno. McNulty, do ..... | do ..... | 17½ | 24 | 8 | 19 | 22 | 90½ | |
| S. Boulanger, Grand Desert..... | Banner ..... | 16½ | 24½ | 9 | 19 | 21 | 90 | |
| Isaac Bailey, Bonfield..... | O. A. C. 72..... | 17 | 23 | 8 | 17 | 22 | 87 | |
| Thos. McNulty, do ..... | Banner ..... | 15½ | 24 | 9 | 18 | 19½ | 86 | |
| Jos. Duchene, Grand Desert..... | do ..... | 15½ | 23 | 7½ | 20 | 19 | 85 | |
| J. A. Boivins, Bonfield..... | ..... | 16 | 23 | 7½ | 18 | 22 | 84½*a* | |
| Geo. Decaire, Callander..... | Mam. Cluster..... | 15½ | 20 | 8 | 12 | 22 | 77½ | |
| P. Boissonneault, Bonfield..... | ..... | 16 | 22 | 7 | 12 | 21 | 76*a* | |
| Jos. A. Rose, do ..... | ..... | 16½ | 18 | 7 | 14 | 20½ | 74*a* | 17 |
| Andrew Rose, do ..... | Victory..... | 16 | 17 | 7 | 12 | 20 | 70*a* | 17, 15 |
| VERNER AGR. SOCIETY. | | | | | | | | |
| *Judge—G. H. Farmer, S. S. Marie, R.R. 2.* | | | | | | | | |
| E. Perrault, Notre Dame du Lac.. | O. A. C. 72..... | 18½ | 24 | 8 | 19 | 24½ | 94 | 15 |
| A. Beaudry, Verner..... | do ..... | 16½ | 24½ | 8½ | 19 | 20½ | 89 | 15 |
| Jas. B. Leach, do ..... | do ..... | 17½ | 21 | 9 | 19 | 22 | 88½ | 15 |
| H. Demers, do ..... | do ..... | 17¼ | 21 | 8 | 18 | 22½ | 86¾ | 15 |
| H. Filiatrault, do ..... | do ..... | 17 | 21 | 8 | 18 | 22 | 86 | 15 |
| F. Laframboise, do ..... | do ..... | 16 | 23½ | 8 | 18 | 20 | 85½ | |
| A. Gagnon, do R.R. 1.... | do ..... | 16 | 23 | 7½ | 17½ | 21 | 85 | 15 |
| E. Roberge, do ..... | do ..... | 15 | 22 | 7 | 17 | 20 | 81 | 9 |
| F. Desormeau, do ..... | do ..... | 15½ | 20 | 7 | 18 | 20 | 80½ | 15 |
| D. Boufford, do ..... | do ..... | 14½ | 21 | 8 | 16 | 19 | 78½ | 7, 15 |
| NORFOLK. | | | | | | | | |
| COURTLAND AGR. SOCIETY. | | | | | | | | |
| *Judge—H. L. Tisdale, Brampton.* | | | | | | | | |
| O. Oatman, Tillsonburg, R.R. 4... | Banner ..... | 17 | 23 | 7 | 20 | 23 | 90 | 15 |
| V. McDonald, do ..... | do ..... | 16½ | 25 | 7 | 19 | 22 | 89½ | |
| R. G. Herron, Courtland, ..... | do ..... | 17½ | 23 | 8 | 16 | 23 | 87½ | 10, 15 |
| J. C. Byerlay, do R.R. 2.. | do ..... | 17 | 20 | 8 | 19½ | 22 | 86½ | 15, 14 |
| I. Atkinson, do ..... | do ..... | 17 | 20 | 7 | 19 | 20½ | 83½ | 10, 15, 14 |
| O. C. Buchner, do ..... | do ..... | 15½ | 20 | 8 | 19½ | 20 | 83 | |
| J. T. Simmons, do ..... | do ..... | 16 | 20 | 8 | 17 | 20½ | 81½ | 15, 14 |
| J. F. Robinson, do ..... | O. A. C. 72..... | 15 | 20 | 8 | 19 | 19 | 81 | 14, 15 |
| W. E. Sandham, Tillsonburg, R.R.4 | Banner ..... | 17½ | 15 | 8 | 15 | 24 | 79½ | 10, 15, 14 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| NORTHUMBERLAND. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| SEYMOUR AGR. SOCIETY. | | | | | | | | |
| *Judge—J. J. Virtue, Hampton.* | | | | | | | | |
| Chas. Bonnycastle, Campbellford.. | O. A. C. 72..... | 18 | 24 | 8 | 20 | 23 | 93 | 15 |
| H. S. Aylesworth, Norham..... | do ..... | 17½ | 24 | 9 | 19 | 22½ | 92 | |
| Wm. Rannie, Campbellford..... | do ..... | 17½ | 25 | 8 | 18 | 22½ | 91 | |
| Mrs. W. W. Whitton, do ..... | do ..... | 17½ | 24 | 9 | 19 | 21 | 90½ | |
| G. Curle, do ..... | do ..... | 16 | 24 | 9 | 20 | 21 | 90 | |
| H. McKelvie, do ..... | Banner ..... | 17 | 24 | 8 | 19 | 21½ | 89½ | 15 |
| Roy Walker, Harold, R.R. 2..... | O. A. C. 72..... | 16 | 23 | 7 | 18 | 23 | 87 | 15 |
| W. H. Locke, Campbellford..... | Banner ..... | 16½ | 23 | 8 | 18 | 21 | 86½ | 10 |
| Alex. Hume, do ..... | O. A. C. 72..... | 14 | 23 | 9 | 19 | 20 | 85 | 15 |
| Wm. Fisher, Hastings, R.R. 2..... | Granary Filler.... | 14 | 24 | 7 | 18 | 20½ | 83½ | |
| M. West, Campbellford..... | O. A. C. 72..... | 16 | 20 | 8 | 17 | 22 | 83 | 4 |
| Runciman Bros., Warkworth..... | do ..... | 17 | 24 | 8 | 13 | 20½ | 82½ | |
| Chas. Bedford, Campbellford..... | Sheffield Standard. | 16 | 24 | 8 | 15 | 21 | 82*a* | |
| Robt. Innis, do ..... | O. A. C. 72..... | 15 | 24 | 8 | 14½ | 20 | 81½ | |
| Wm. J. Ross, Meyersburg..... | Banner ..... | 15½ | 20 | 7 | 18 | 20½ | 81 | 2, 15 |
| Thos. Weatherill, Campbellford... | Prince of Wales... | 15 | 21 | 7 | 16 | 20½ | 77½*a* | 15 |
| Jos. Hoey, Campbellford..... | O. A. C. 72..... | 14½ | 15 | 8 | 18 | 20 | 75½ | 4, 1 |
| ONTARIO. | | | | | | | | |
| BEAVERTON AGR. SOCIETY. | | | | | | | | |
| *Judge—Cecil H. Walsh, Port Hope.* | | | | | | | | |
| W. H. Burns, Beaverton, R.R. 1.. | O. A. C. 72..... | 17½ | 22 | 9 | 19 | 22½ | 90 | 2, 15, 11, 4, 1 |
| Robt. Ross, do R.R. 1.. | Banner ..... | 17½ | 21 | 9 | 18 | 22½ | 88 | 2, 15 |
| F. A. Veale, do ..... | Victory..... | 18 | 22 | 9 | 18 | 22½ | 87½*a* | 15 |
| Jno. Westlake, do R.R. 3.. | Banner ..... | 17½ | 20 | 8 | 19 | 22½ | 87 | 2, 1, 15, 4, 14 |
| D. Gilchrist, Brechin..... | O. A. C. 72..... | 17 | 20 | 9 | 19 | 21½ | 86½ | 14, 1, 2 |
| Calder Bros., Beaverton,..... | Bumper King..... | 16 | 23½ | 8½ | 18½ | 21¼ | 85¾*a* | 2 |
| F. W. Rilance, do R.R. 2... | Banner..... | 17½ | 20 | 8½ | 18½ | 21 | 85½ | 2, 15, 10, 4, 14, 11 |
| D. A. Calder, do R.R. 2... | do ..... | 15½ | 23 | 8 | 16½ | 22 | 85 | 15, 14, 2 |
| S. J. Furniss, Brechin, R.R. 3..... | Imp. Banner..... | 19 | 20 | 9 | 14 | 22½ | 84½ | 1, 2, 15 |
| J. Harrison, Beaverton..... | Victory..... | 17 | 23 | 9 | 16 | 21 | 84*a* | 14, 2 |
| Mrs. J. J. King, Cannington, R.R.2 | Prince Royal..... | 15½ | 21 | 8 | 17½ | 20 | 80*a* | 1, 2 |
| Jno. Ross, Beaverton..... | Victory..... | 15 | 20 | 8½ | 15½ | 19½ | 76½*a* | 4, 1, 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| OXFORD. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| E. Nissouri Agr. Society. *Judge—Wm. Hudd, Shelburne.* | | | | | | | | |
| D. R. Calder, Lakeside, R.R. 2. | O. A. C. 72 | 19½ | 23 | 9½ | 17 | 24 | 93 | |
| Geo. A. Sutherland, do | do | 18½ | 20½ | 9 | 19 | 25 | 92 | 2 |
| Mercer Bros., Thamesford | Banner | 19 | 20 | 9 | 18 | 25 | 91 | |
| F. G. Seaton, Lakeside | O. A. C. 72 | 17½ | 24 | 8 | 16 | 25 | 90½ | |
| W. I. Hogg, Thamesford, R.R. 2 | do | 19 | 20 | 7 | 20 | 24 | 90 | 2 |
| Jno. C. Henderson, Lakeside, R.R.2 | Banner | 20 | 21 | 8 | 15 | 25 | 89 | 10, 2 |
| D. Thompson, Thamesford, R.R. 2 | O. A. C. 72 | 19½ | 18½ | 8 | 17 | 25 | 88 | 2 |
| Geo. K. Matheson, Harrington W. | do | 16 | 21 | 9 | 18 | 23½ | 87½ | 2 |
| Jno. Bradshaw, Thamesford, R.R. 2 | O. A. C. 72 | 15½ | 22 | 8 | 19 | 22½ | 87 | 2 |
| Wm. Morrison, Lakeside, R.R. 2 | do | 20 | 20 | 7 | 15 | 24 | 86 | 2 |
| A. Whetstone, do R.R. 2 | Banner | 16 | 18 | 9 | 18 | 24 | 85 | |
| A. Webster, do | Victory | 18 | 21 | 6 | 18 | 23½ | 84½*a* | 14, 15 |
| R. A. McDonald, do R.R. 2 | Banner | 15 | 20 | 9 | 18 | 22 | 84 | 2 |
| South Norwich Agr. Society. *Judge—H. L. Tisdale, Brampton.* | | | | | | | | |
| Chas. E. Bell, Otterville | Banner | 17 | 22 | 8 | 20 | 23 | 90½ | 15 |
| Alex. Moore, La Salette, R.R. 2 | do | 17 | 20 | 9 | 20 | 23 | 89 | 14, 15 |
| J. W. Monk, Otterville, R.R. 1 | do | 17 | 22 | 7 | 20 | 22½ | 88½ | 15 |
| Fred Lee, do R.R. 1 | do | 17 | 22 | 7 | 20 | 22 | 88 | 15, 14 |
| M. W. Haley, do R.R. 2 | do | 18 | 18 | 8 | 20 | 23 | 87 | 15 |
| J. L. Oatman, Tillsonburg, R.R. 3 | do | 18 | 18 | 7 | 20 | 23 | 86 | 15 |
| A. Lawrence, La Salette, R.R. 2 | do | 16 | 18½ | 8½ | 20 | 22½ | 85½ | 15, 14 |
| J. R. Johnson, Springford | do | 14½ | 20 | 8 | 20 | 21 | 83½ | 15, 14 |
| W. L. Foreman, Norwich, R.R. 1 | do | 17½ | 20 | 6 | 19½ | 20 | 83 | 15 |
| Lewis Mason, Otterville | do | 16 | 18 | 7 | 20 | 21 | 82 | 15, 14 |
| M. Oatman, Tillsonburg, R.R. 3 | do | 15 | 20 | 6 | 20 | 19½ | 80½ | 15 |
| F. H. Kenney, Springford | do | 18½ | 14 | 6 | 20 | 20 | 78½ | 14 |
| F. Malcolm | do | 15 | 15 | 7 | 20 | 20½ | 77½ | 10, 15, 2 |
| Wm. Innis, Otterville, R.R. 2 | do | 12 | 15 | 6 | 20 | 20 | 73 | 10, 15 |
| Woodstock Agr. Society. *Judge—Wm. Hudd, Shelburne.* | | | | | | | | |
| J. W. Innes, Woodstock, R.R. 3 | Banner | 19 | 22 | 9 | 20 | 25 | 95 | 14 |
| B. R. Town, Beachville, R.R. 1 | do | 19 | 21 | 10 | 18½ | 25 | 93½ | 14 |
| J. C. Karn, Woodstock, R.R. 1 | Liberty | 20 | 19 | 10 | 20 | 25 | 92*a* | 14 |
| Jno. Lockhart, do R.R. 5 | Banner | 20 | 21 | 7 | 15 | 25 | 88 | 2 |
| R. N. McGhee, Beachville | do | 18 | 21 | 8 | 18 | 20 | 85 | 15 |
| H. Turner, Woodstock, R.R. 3 | Siberian | 19 | 15 | 8 | 16 | 24 | 80*a* | 2 |
| F. W. Goble, do R.R. 3 | O. A. C. 72 | 16½ | 14 | 7 | 18½ | 23½ | 79½ | 2, 10 |
| T. H. Dent, do | Banner | 17 | 16 | 6 | 17 | 23 | 79 | 10 |
| E. Tree, do R.R. 3 | Daubeny | 18 | 19 | 7 | 15 | 22 | 79*a* | 14, 2 |
| Jno. S. Amos, do R.R. 5 | Banner | 17½ | 12½ | 7 | 15 | 23 | 75 | 2, 10 |
| Geo. de Montmorency, Woodstock, R.R. 6 | Imp. Banner | 17 | 5 | 8 | 18 | 25 | 73 | 2 |

Note.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PARRY SOUND. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| ARMOUR, RYERSON AND BURK'S FALLS AGR. SOCIETY. | | | | | | | | |
| *Judge—H. L. Goltz, Bardsville.* | | | | | | | | |
| J. Bell, Burk's Falls | Banner | 18 | 23 | 9 | 18 | 23 | 91 | 1 |
| Jas. Webber, do R.R. 2 | do | 17½ | 23 | 9 | 18 | 23 | 90½ | |
| Herman Smith, do | O. A. C. 72 | 17 | 23 | 9 | 17 | 22 | 88 | |
| D. Mitchell, do R.R. 1 | do | 17 | 22 | 9 | 17 | 22½ | 87½ | 2 |
| Oliver Smith, do R.R. 1 | do | 17 | 22 | 9 | 17 | 22 | 87 | |
| Joshua Webber, do R.R. 1 | Banner | 17 | 23 | 9 | 17 | 20 | 86 | |
| J. Varcoe, do R.R. 2 | do | 16 | 21 | 9 | 18 | 21 | 85 | |
| Wm. Brimacombe, do R.R. 1 | Derby | 14 | 23 | 9 | 16 | 22 | 84 | |
| Wm. Chalmers, do | Mam. Cluster | 16 | 24 | 7 | 16 | 19 | 82 | |
| A. M. Marsden, do | Banner | 15 | 21 | 8 | 16 | 20 | 80 | 1 |
| J. T. Smith, do | Rennie's E.Yielder | 16 | 22 | 8 | 16 | 19 | 79*a* | |
| CHRISTIE AGR. SOCIETY. | | | | | | | | |
| *Judge—R. J. Hall, Shelburne, R.R. 2.* | | | | | | | | |
| Jno. E. White, Orrville | O. A. C. 72 | 15 | 23 | 7 | 15 | 20 | 80 | |
| Wm. Hannon, do | Am. Banner | 15 | 22 | 6 | 15 | 17 | 75 | |
| Ed. White, do | Abundance | 13 | 21½ | 6 | 15 | 19 | 74½ | |
| Jas. White, do | O. A. C. 72 | 14 | 21 | 7 | 14 | 18 | 74 | 1 |
| Geo. Culp, do | Imperial | 13 | 22 | 5 | 17 | 18½ | 73½*a* | |
| LORING AGR. SOCIETY. | | | | | | | | |
| *Judge—H. L. Goltz, Bardsville.* | | | | | | | | |
| R. Yeo, Loring | O. A. C. 72 | 17 | 23 | 9 | 18 | 23 | 90 | |
| Jno. I. Hughes, do | do | 16 | 22 | 9 | 18 | 23 | 88 | |
| Donald Smith, do | Yel. Russian | 16 | 23 | 8 | 18 | 22 | 87 | 10 |
| Jas. Smith, do | do | 16 | 22 | 9 | 18 | 21½ | 86½ | 10 |
| Chas. Simms, Sr., Loring | Banner | 15½ | 22 | 9 | 18 | 21½ | 86 | |
| Jas. R. Bain, do | do | 15½ | 22 | 9 | 17 | 22 | 85½ | |
| Jno. Haggart, do | do | 17 | 21 | 8 | 17 | 22 | 85 | 2, 10 |
| Jno. Smith, do | White Wave | 17 | 21 | 8 | 17 | 21 | 82*a* | 10 |
| Jno. S. Bain, Sr., do | O. A. C. 72 | 15 | 22 | 8 | 16 | 21 | 82 | |
| Jno. H. Bain, do | New Industrial | 17 | 22 | 8 | 17 | 19½ | 81½*a* | 1 |
| Rudolph Bain, do | White Wave | 15½ | 22 | 8 | 17 | 20½ | 81*a* | 1 |
| Wm. Robertson, Spring Creek | New Industrial | 15 | 22 | 7½ | 17 | 19½ | 79*a* | 1 |
| Dan. Sinclair, Loring | Mam. Cluster | 13½ | 21 | 6 | 17 | 20½ | 78 | 1 |
| Chas. Berger, Arnstein | Tartar King | 14 | 21 | 8 | 16 | 20 | 77*a* | 2, 10 |
| A. Richardson, Spring Creek | | 14 | 20 | 6 | 17 | 20 | 75*a* | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PARRY SOUND.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| MACHAR AGR. SOCIETY. | | | | | | | | |
| *Judge—D. I. McClure, Toronto.* | | | | | | | | |
| Thos. Bottomley, South River | O. A. C. 72 | 16½ | 24 | 8 | 19 | 21 | 88½ | 15 |
| J. S. Cole, do | do | 15½ | 23 | 8 | 19 | 19½ | 85 | |
| S. R. Scarlett, do | Mam. Cluster | 16 | 23 | 7½ | 19 | 18½ | 84 | 15, 10 |
| Jno. E. Ralston, do | Banner | 15 | 17 | 8 | 18 | 20½ | 78½ | 10, 15 |
| C. B. Cale, do | O. A. C. 72 | 14 | 20 | 7 | 18 | 19 | 78 | 15 |
| H. A. Boyd, do | do | 15½ | 17 | 7 | 18 | 18½ | 76 | 2 |
| Wm. Hanson, do | do | 15½ | 21 | 8 | 13 | 17½ | 75 | 15 |
| Jas. Hawthorne, Midford | do | 14 | 20 | 7 | 18 | 15½ | 74½ | 15, 17 |
| Andrew McKee, South River | Banner | 15½ | 18 | 6 | 16 | 18½ | 74 | 17 |
| R. M. Carter, do | do | 12½ | 20 | 7 | 17 | 15 | 71½ | 15, 10 |
| MAGNETAWAN AGR. SOCIETY. | | | | | | | | |
| *Judge—D. I. McClure, Toronto.* | | | | | | | | |
| C. C. Miller, Magnetawan | O. A. C. 72 | 16 | 22 | 8 | 18 | 23 | 87 | |
| R. Jas. Stewart, do | Mam. Cluster | 16 | 21 | 8 | 18 | 22 | 85 | |
| T. Stewart, do | Banner | 15½ | 22 | 7 | 20 | 17½ | 82 | 15 |
| Amos Keppy, Spence | Am. Banner | 16 | 21 | 8 | 17 | 18½ | 80½ | 15, 6 |
| Frank Stewart, Magnetawan | Banner | 15½ | 20 | 8 | 19 | 17½ | 80 | 15 |
| W. L. Miller, do | Mam. Cluster | 14½ | 22 | 7 | 17 | 17½ | 78 | 15 |
| H. Lennox, do | New Bank | 14½ | 22 | 7 | 18 | 17½ | 77*a* | 15 |
| Wm. Veitch, Spence | Abundance | 13½ | 20 | 7 | 18 | 17½ | 76 | 15 |
| D. F. Jenkins, Magnetawan | Granary Filler | 15½ | 17 | 7 | 17 | 18½ | 75 | 15, 2 |
| MCKELLAR AGR. SOCIETY. | | | | | | | | |
| *Judge—Geo. E. Foster, Honeywood.* | | | | | | | | |
| E. Watkins, McKellar | Mam. Cluster | 17½ | 25 | 10 | 14 | 22½ | 89 | |
| E. Buchner, Hurdville | O. A. C. 72 | 17 | 22 | 7½ | 17 | 22½ | 86 | |
| Wm. Moffatt, McKellar | do | 18 | 22 | 8 | 15 | 22½ | 85½ | |
| C. J. McKeown, do | do | 16 | 24 | 7 | 16½ | 20 | 83½ | 14 |
| W. F. Tait, do | Abundance | 17 | 18 | 8 | 17 | 23 | 83 | 1 |
| Wm. E. Taylor, do | O. A. C. 72 | 15½ | 22 | 9 | 17 | 19 | 82½ | |
| R. Harris, do | do | 16 | 23 | 6 | 17 | 19½ | 81½ | 15 |
| R. S. Jackson, do | do | 15 | 20 | 6 | 19½ | 19 | 79½ | 15 |
| M. Whitmell, do | do | 16 | 20 | 6 | 15 | 20½ | 77½ | 15 |
| R. H. Moffatt, do | Sterling | 16 | 20 | 7 | 16 | 20 | 77*a* | |
| Geo. Quinn, do | Banner | 16 | 20 | 7 | 12 | 19½ | 74½ | |
| Wm. Watkins, do | Mam. Cluster | 14 | 25 | 7 | 10 | 18 | 74 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PARRY SOUND.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| McMURRICH AGR. SOCIETY. | | | | | | | | |
| *Judge—Arch. Greer, Mansfield, R.R. 1.* | | | | | | | | |
| Hy. Watson, Sprucedale | Banner | 15 | 22 | 8 | 18 | 18½ | 81½ | |
| W. E. Pearce, do | do | 16 | 22 | 6 | 16 | 21 | 81 | |
| Jas. Downes, do | O. A. C. 72 | 16 | 22 | 6 | 16 | 19 | 79 | |
| P. J. Farrell, do | Rennie's E.Yielder. | 16 | 22 | 6 | 17 | 19 | 78*a* | 12 |
| W. J. Fowler, do | Banner | 16 | 22½ | 5 | 16 | 18 | 77½ | 10 |
| F. Walker, Royston | do | 13 | 22 | 7 | 17 | 18 | 77 | |
| C. & J. Stewart, Burk's Falls, R.R. 1 | Rennie's E.Yielder. | 16 | 23 | 6 | 14 | 19 | 76*a* | 15 |
| J. C. Marshall & Son, Sprucedale | Am. Banner | 14 | 22 | 6 | 14 | 20 | 76 | |
| Geo. Downes, do | Reg. Banner | 13 | 19 | 7 | 19 | 17 | 75 | |
| PERRY AGR. SOCIETY. | | | | | | | | |
| *Judge—Arch. Greer, Mansfield, R.R. 1.* | | | | | | | | |
| Henry Tebby, Sr., Fern Glen | O. A. C. 72 | 15½ | 21 | 7 | 18 | 20 | 81½ | 13 |
| H. R. Hayward, Scotia | Banner | 15 | 23 | 6 | 18 | 19 | 81 | |
| H. T. Tebby, Fern Glen | O. A. C. 72 | 16 | 20 | 7 | 17 | 19 | 79 | |
| Chas. White, Emsdale | Gov. No. 1 West'n. | 15 | 22 | 6 | 18 | 19 | 78*a* | |
| J. E. Rawley, do | Rennie's E.Yielder. | 15 | 20 | 7 | 16 | 20 | 76*a* | 15 |
| Wm. G. Leigh, Scotia | O. A. C. No. 3 | 13 | 21 | 7 | 18 | 18 | 75*a* | 4, 10 |
| G. Roberts, Emsdale | Gov. No. 1 West'n. | 13 | 21 | 6 | 15 | 18 | 71*a* | 10 |
| POWASSAN AGR. SOCIETY. | | | | | | | | |
| *Judge—Henry Knight, Jr., S. S. Marie, R.R. 1.* | | | | | | | | |
| Jos. Alston, Powassan | O. A. C. 72 | 16½ | 25 | 9 | 19 | 22½ | 92 | |
| H. J. Paul, do R.R. 2 | do | 17 | 24 | 9½ | 19 | 22 | 91½ | |
| O. Gough, do R.R. 3 | Banner | 15½ | 24 | 7½ | 19½ | 20½ | 87 | |
| J. A. Purdon, do R.R. 2 | do | 15½ | 24½ | 8 | 18 | 20½ | 86½ | |
| E. J. Purdon, do R.R. 2 | do | 17 | 20 | 8 | 19 | 22 | 86 | |
| A. R. Ganjion, do R.R. 2 | Imperial | 15 | 24 | 8 | 18 | 21 | 84*a* | |
| D. Graff, do R.R. 4 | do | 17½ | 24 | 7 | 17 | 20 | 83½*a* | |
| Jas. D. Healey, do Box 75 | Banner | 15½ | 19 | 7 | 19½ | 21 | 82 | 17 |
| L. A. Purdon, do R.R. 2 | do | 14½ | 20 | 8 | 18 | 20 | 80½ | 15, 17 |
| Jos. B. Riecks, do R.R. 4 | Northland | 16 | 21 | 5 | 17 | 21 | 78*a* | 17 |
| Jas. Oldfield, do | O. A. C. 72 | 14½ | 20 | 6 | 16 | 21 | 77½ | 17 |
| W.Geo. Oldfield, do | do | 14 | 21 | 6 | 16 | 20 | 77 | 17 |
| Lawr. Purdon, do R.R. 2 | Banner | 14 | 18 | 9 | 10 | 19 | 70 | 15 |

NOTE.—The figure in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PARRY SOUND.—*Continued* | | [20] | [25] | [10] | [10] | [25] | [100] | |
| ROSSEAU AGR. SOCIETY. | | | | | | | | |
| *Judge—Geo. McKague, Teeswater.* | | | | | | | | |
| John McCans, Rosseau | O. A. C. 72 | 16½ | 23 | 9½ | 19½ | 19½ | 88 | 15, 2 |
| E. J. Sirrett, do | do | 17 | 21½ | 9 | 19 | 20 | 86½ | |
| G. Grenke, do | do | 16 | 21 | 9½ | 19 | 20½ | 86 | |
| B. Einarson, Hekkla | Mam. Cluster | 16 | 21 | 9½ | 18½ | 20½ | 85½ | 10 |
| W. Wager, Rosseau | Am. Banner | 15½ | 21 | 9 | 19 | 19 | 83½ | 10, 15 |
| Robt. Wilson, do | Gold Rain | 16½ | 24 | 6 | 19 | 19½ | 83*a* | |
| V. T. Wright, do | Western | 17½ | 22 | 8½ | 16 | 20½ | 82½*a* | 15 |
| Jno. Crawford, do | Sensation | 17½ | 20 | 7 | 19 | 20 | 81½*a* | 15, 10, 2 |
| S. Stoneman, Turtle Lake | Gold Rain | 15 | 22 | 5 | 18 | 19 | 77*a* | |
| H. Stoneman, do | do | 15½ | 18 | 6 | 18½ | 19 | 75*a* | 6, 10, 4 |
| UNITED TPS. AGR. SOCIETY. | | | | | | | | |
| *Judge—Geo. E. Foster, Honeywood.* | | | | | | | | |
| W. S. Quinn, McKellar | Mam. Cluster | 17 | 25 | 6 | 16 | 21 | 85 | |
| Wm. Hamilton, Dunchurch | O. A. C. 72 | 17½ | 25 | 7 | 15 | 20 | 84½ | |
| Allan Robertson, do | Am. Banner | 17½ | 20 | 7 | 16 | 21¼ | 81½ | 9 |
| Jno. Moore, do | do | 17½ | 20 | 9½ | 12 | 20½ | 79½ | 15 |
| Wm. Todd, Maple Island | O. A. C. 72 | 16 | 20 | 5 | 16 | 18½ | 75½ | 1 |
| J. H. Whitmell, Dunchurch | Mam. Cluster | 15 | 25 | 4 | 14 | 16 | 74 | |
| Jno. Whitmell, do | O. A. C. 72 | 15 | 18 | 7 | 14 | 19 | 73 | 7, 2 |
| PEEL. | | | | | | | | |
| ALBION AND BOLTON AGR. SOCIETY. | | | | | | | | |
| *Judge—D. J. Gibson, Bowmanville, R.R. 4.* | | | | | | | | |
| A. Robinson, Bolton | Banner | 17½ | 23 | 8½ | 19 | 22 | 90 | 15 |
| J. B. Robinson, do | do | 17½ | 21 | 8 | 19 | 23 | 88½ | 15, 4 |
| E. Armstrong, do | do | 16 | 20 | 8 | 20 | 21 | 85 | 15 |
| W. E. Downey, do | do | 16 | 20½ | 8 | 19 | 21 | 84½ | 2, 15 |
| Russell See, do | O. A. C. 72 | 18 | 20 | 6 | 17 | 23 | 84 | 4, 1 |
| Geo. Downey, do R.R. 2 | Imp. Banner | 17 | 18 | 8 | 18 | 21 | 82 | 10, 1 |
| A. S. Rutherford & Sons, Bolton | O. A. C. 72 | 16 | 18 | 9 | 16 | 22 | 81 | 10, 14, 2 |
| O. H. Downey, Bolton | Banner | 17 | 17 | 8½ | 16 | 21 | 79½ | 2, 4 |
| Bert Bishop, do | do | 16 | 17 | 7 | 17 | 22 | 79 | 1, 15, 14, 4 |
| S. Wilson, do R.R. 5 | do | 14 | 15 | 9 | 18 | 20½ | 76½ | 2, 4, 1 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PEEL.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| COUNTY OF PEEL AGR. SOCIETY. | | | | | | | | |
| *Judge—D. J. Gibson, Bowmanville, R.R. 4.* | | | | | | | | |
| T. C. Fraiser, Streetsville, R.R. 3. | O. A. C. 72 | 19 | 20 | 9 | 19 | 23½ | 90½ | 2 |
| Geo. W. Cheney, Malton | Banner | 16½ | 24 | 8 | 19 | 22½ | 90 | |
| W. J. Fraiser, Streetsville, R.R. 3. | O. A. C. 72 | 18 | 23 | 8 | 17 | 23 | 89 | 15 |
| E. Armstrong, Brampton, R.R. 6 | Banner | 18 | 21 | 8 | 18 | 22½ | 87½ | 10, 4 |
| L. J. C. Bull, do | O. A. C. 72 | 16 | 22 | 8 | 18 | 22 | 86 | |
| Jas. R. Fallis, do | Abundance | 16 | 20 | 9 | 19 | 21½ | 85½ | 10, 15 |
| N. R. Beatty, Inglewood, R.R. 1. | Hamilton | 17 | 24 | 9 | 15 | 21½ | 84½*a* | |
| Ed. Morris, Brampton, R.R. 5 | Irish | 15½ | 23 | 8 | 17 | 21 | 82½*a* | 15 |
| A. McLean, do R.R. 3 | Banner | 15 | 19 | 6 | 16 | 21 | 77 | 2 |
| R. Snell, do R.R. 3 | O. A. C. 72 | 14 | 17 | 8 | 18 | 19½ | 76½ | 10, 2 |
| Russell Bros., do R.R. 3 | Abundance | 17 | 18 | 5 | 14 | 21½ | 75½ | 2, 1 |
| TORONTO TP. AGR. SOCIETY. | | | | | | | | |
| *Judge—F. A. Clark, Gormley, R.R. 2.* | | | | | | | | |
| E. Adamson, Streetsville, R.R. 1. | Ligowa | 18 | 24 | 9 | 19 | 23½ | 91½*a* | 12, 15 |
| C. W. Sparling, do R.R. 2. | Banner | 16 | 24½ | 9 | 19 | 22½ | 91 | |
| Jas. D. Steen, Meadowvale | Reg. Banner | 17½ | 24 | 9 | 18 | 22 | 90½ | 15, 14, 10 |
| Jno. Wagner, Hornby, R.R. 2 | Am. Banner | 17½ | 13 | 8½ | 19⅓ | 23½ | 82 | 2, 15 |
| D. H. McCaugherty, Streetsville. | Ligowa | 18 | 14 | 9 | 19⅓ | 22½ | 81*a* | 2, 10 |
| Jas. B. Ross, Meadowvale | O. A. C. 72 | 15 | 24 | 7 | 16 | 17½ | 79½ | 10 |
| W. L. McCracken, do | Yel. Russian | 15½ | 18 | 7 | 18 | 20 | 78½ | 2, 15 |
| S. L. Hall, Streetsville, R.R. 2 | O. A. C. 72 | 16½ | 16 | 8 | 16 | 20½ | 77 | 1, 14 |
| Geo. S. Bonham, do | do | 14½ | 14 | 8 | 19 | 19 | 74½ | 1, 2 |
| J. W. Miller, do R.R. 2 | Ligowa | 16 | 10 | 8 | 18½ | 22½ | 73*a* | 2, 1, 14 |
| PERTH. | | | | | | | | |
| FULLARTON, LOGAN AND HIBBERT AGR. SOCIETY. | | | | | | | | |
| *Judge—J. G. McPharlin, Essex, R.R. 3.* | | | | | | | | |
| H. R. Greenwood & Son, Mitchell, R.R. 1 | Banner | 18½ | 20 | 9 | 20 | 24 | 91½ | 2 |
| Robt. Norris, Staffa | Imp. Banner | 17½ | 23 | 8½ | 19 | 22½ | 90½ | |
| Amos Doupe, Kirkton | Banner | 17½ | 22 | 8¼ | 19 | 22½ | 89¼ | 15, 12 |
| J. M. Miller, Staffa | Abundance | 17¼ | 22 | 8 | 17 | 23¼ | 87½ | |
| S. Mulholland, Mitchell, R.R. 4 | do | 18¼ | 19½ | 9 | 17 | 22½ | 86¼ | 2 |
| Alex. K. Cole, do R.R. 1 | Yel. Russian | 17½ | 17½ | 9 | 19 | 22½ | 85½ | 2, 15 |
| Robt. Burchill, Dublin, R.R. 2 | Banner | 18 | 15 | 9 | 18 | 22½ | 82½ | 2, 10 |
| Wm. M. Clark, Mitchell, R.R. 1. | Yel. Russian | 17¼ | 17½ | 6½ | 18 | 22¼ | 81½ | 2 |
| W. Winteringham, do R.R. 3. | Gold Drop | 18 | 16 | 8 | 18 | 22¾ | 80¾*a* | |
| Enos Docking, Dublin, R.R. 2 | Banner | 16¾ | 15 | 9 | 17 | 22½ | 80¼ | 2 |
| Wm. M. Butson, Mitchell, R.R. 2 | Granary Filler | 17 | 15 | 7½ | 17½ | 22¾ | 79¾ | 2, 1 |
| Wm. Forrester, do | Siberian | 18 | 15 | 8½ | 17 | 23 | 79½*a* | 2 |
| Thos. Tubb. do | O. A. C. 72 | 17½ | 15 | 7 | 17 | 21½ | 78 | 1 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PERTH.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| KIRKTON AGR. SOCIETY. | | | | | | | | |
| *Judge—J. G. McPharlin, Essex, R.R. 3.* | | | | | | | | |
| Jas. Moore, St. Mary's R.R. 1 | Banner | 17½ | 20 | 8½ | 18½ | 23¼ | 87¾ | 2, 15 |
| D. Roger, do | do | 16¾ | 22 | 7½ | 17½ | 23¼ | 87 | |
| Wm. Switzer, do | do | 17¾ | 19 | 8½ | 19 | 22½ | 86¾ | 12, 15, 14 |
| Jas. Robinson, do | Yel. Russian | 17¼ | 20 | 8 | 19 | 22¼ | 86½ | 15, 14 |
| W. Shier, Woodham | Granary Filler | 17 | 15 | 8½ | 19 | 22½ | 82 | 1 |
| M. Brethour, St. Mary's, R.R. 6 | O. A. C. 72 | 18 | 15 | 7½ | 18½ | 22½ | 81½ | 1, 2 |
| Wm. Arthur, St. Mary's R.R. 1 | Banner | 18¼ | 14 | 8½ | 17 | 23½ | 81¼ | 2 |
| Wm. Urquhart, do | do | 17¾ | 14 | 8 | 17 | 22½ | 79¼ | 1 |
| Jno. Malloy, do | do | 15½ | 15 | 7 | 18 | 22½ | 78 | 1, 2 |
| Wm. Blackler, do | Gold Drop | 15½ | 15 | 6½ | 18 | 22 | 75*a* | 1 |
| Wm. Harding, do | Banner | 14½ | 15 | 6½ | 17 | 21¾ | 74¾ | 2 |
| Geo. Kemp, Kirkton | do | 14½ | 15 | 6½ | 17 | 21½ | 74½ | |
| STRATFORD AGR. SOCIETY. | | | | | | | | |
| *Judge—Thos. Creighton, Mooretown.* | | | | | | | | |
| R. Thompson, St. Paul's, R.R. 2 | Yel. Russian | 17½ | 23 | 8 | 19 | 22 | 89½ | |
| Wm. Hay, do | Banner | 18 | 22 | 9 | 17 | 21½ | 87½ | |
| Alex. Horne, Gad's Hill | O. A. C. 72 | 18½ | 20 | 9 | 18 | 21 | 86½ | |
| J. Schmidt, Stratford, R.R. 1 | Banner | 16½ | 22 | 8 | 17 | 20½ | 84 | 15 |
| Wm. G. Hislop, do | do | 18½ | 15 | 9 | 18 | 22½ | 83 | |
| E. Zinn, do | O. A. C. 72 | 18 | 18 | 7 | 17 | 22 | 82 | |
| W. W. Ballantyne, Stratford, R.R.3 | do | 17½ | 17 | 7 | 18 | 21 | 80½ | |
| Wm. H. Douglas, St. Paul's | Yel. Russian | 15 | 18 | 8 | 17 | 21 | 79 | |
| L. Ballantyne, Stratford, R.R. 3 | O. A. C. 72 | 13 | 20 | 6 | 17 | 21 | 77 | |
| Adam Bell, St. Paul's, R.R. 2 | Banner | 15 | 13 | 7 | 17½ | 22 | 74½ | 2, 1 |
| Geo. Ross, Stratford, R.R. 1 | do | 16 | 11 | 8 | 18 | 21 | 74 | 2, 15 |
| Litt Bros., Sebringville | Yel. Russian | 15 | 14 | 7 | 17 | 20 | 73 | |
| Jas. Gloyn, St. Paul's, R.R. 2 | Banner | 14½ | 17 | 5 | 17 | 19½ | 73 | |
| Jno. Fraser, Stratford, | O. A. C. 72 | 14 | 17 | 6 | 16 | 19½ | 72½ | |
| Alvin Cook, do R.R. 1 | Banner | 14½ | 12 | 7 | 17 | 21 | 71½ | 1, 2 |
| McNamara Bros., Stratford, R.R. 1 | O. A. C. 72 | 17 | 10 | 6 | 17 | 21 | 71 | 2 |
| H. Pitts, do | do | 15 | 11 | 7 | 17 | 20 | 70 | 2, 1 |
| PETERBOROUGH. | | | | | | | | |
| DUMMER AND DOURO AGR. SOCIETY | | | | | | | | |
| *Judge—F. A. Comerford, Eldorado.* | | | | | | | | |
| F. Fitzgerald, Indian River, R.R. 2 | O. A. C. 72 | 16 | 24 | 8 | 19 | 21 | 88 | |
| F. Morgan, Warsaw | do | 16 | 25 | 8 | 18 | 20½ | 87½ | |
| M. O'Brien, Peterboro, R.R. 9 | Banner | 16 | 24 | 8 | 16 | 20½ | 84½ | 15 |
| D. W. Rose, Warsaw, R.R. 1 | O. A. C. 72 | 15½ | 22 | 6 | 20 | 20 | 83½ | 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PETERBOROUGH.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| DUMMER & DOURO AGR. SOC.—*Con.* | | | | | | | | |
| Arch. Tedford, Indian River, R.R. 2 | O. A. C. 72 | 15 | 23 | 7 | 18 | 20 | 83 | 2 |
| Robt. G. Moore, Warsaw, R.R. 1 | do | 16 | 22 | 8 | 17 | 19½ | 82½ | 15 |
| Jno. Barry, Peterboro, R.R. 9 | Banner | 15 | 23 | 7 | 18 | 19 | 82 | |
| Jno. A. Crowe, Lakefield, R.R. 4 | O. A. C. 72 | 16½ | 15 | 7 | 17 | 20½ | 76 | 2 |
| Wm. Hayes, do | do | 15 | 15 | 7 | 18 | 20 | 75 | 2 |
| E. Carlow, Indian River | do | 16 | 10 | 7 | 20 | 20 | 73 | 2 |
| E. PETERBOROUGH AGR. SOCIETY. *Judge—J. J. Virtue, Enniskillen.* | | | | | | | | |
| F. Patterson, Norwood | O. A. C. 72 | 17½ | 25 | 9 | 18 | 22½ | 92 | |
| Wm. Knox, Indian River, R.R. 2 | Abundance | 18 | 22 | 9 | 18 | 23½ | 90½ | 2 |
| J. Sargent & Son, Westwood | O. A. C. 72 | 17 | 23 | 9 | 19 | 21 | 89 | 15 |
| Thompson Bros., Indian River | Banner | 17½ | 24 | 8 | 17 | 21½ | 88 | |
| R. Cuthbertson, Norwood | Prince Royal | 16 | 24½ | 8 | 19 | 20½ | 86*a* | |
| W. G. Barrie, do | O. A. C. 72 | 14 | 24 | 8 | 20 | 19½ | 15 | |
| W. C. Brackenridge, Westwood | Mam. Cluster | 14 | 23 | 7½ | 18 | 20 | 82½ | 15 |
| F. J. Greenbank, Norwood | do | 16 | 20 | 8 | 16 | 21 | 81 | 2 |
| Jno. English, Hastings, R.R. 3 | White Wave | 16 | 22 | 7 | 17 | 20 | 80*a* | 15 |
| S. McMillan, Norwood | Siberian | 14½ | 22 | 9 | 15 | 20 | 78½*a* | 10 |
| Geo. J. Edwards, do | O. A. C. 72 | 14½ | 20 | 7 | 17 | 18½ | 77 | 2 |
| David Barrie, do | do | 16 | 18 | 2 | 20 | 19½ | 75½ | 2, 15 |
| LAKEFIELD AGR. SOCIETY. *Judge—Jas. McNeil, Maple.* | | | | | | | | |
| G. A. Graham, Lakefield, R.R. 2 | O. A. C. 72 | 16½ | 23 | 8 | 19 | 22½ | 89 | |
| N. S. Higgins, do R.R. 1 | Banner | 16 | 20 | 8 | 19 | 20 | 83 | 11, 4 |
| H. Mathews, do | O. A. C. 72 | 16 | 21 | 7 | 18 | 20 | 82 | 15, 11 |
| R. G. Charlton, do R.R. 4 | do | 15½ | 19 | 7 | 18 | 19 | 78½ | 15, 11 |
| H. D. Coons, do R.R. 1 | do | 15½ | 18 | 6 | 18 | 19 | 76½ | 15, 12 |
| B. Q. Dench, do R.R. 4 | do | 15 | 17 | 8 | 16 | 20 | 76 | 10, 15 |
| D. Garvey, do | Banner | 15 | 16 | 8 | 17 | 17 | 73 | 11, 4 |
| H. J. Abbott, do R.R. 2 | O. A. C. 72 | 13½ | 18 | 7 | 15 | 18½ | 72 | |
| OTONABEE AGR. SOCIETY. *Judge—F. A. Comerford., Eldorado.* | | | | | | | | |
| Chas. McIntyre, Peterboro, R.R. 8 | Abundance | 18 | 25 | 9 | 29 | 22 | 94 | |
| Herb. McFarlane, do | do | 17½ | 23 | 9 | 20 | 23 | 92½ | 15 |
| R. E. Drummond, do | Siberian | 18½ | 22 | 8 | 20 | 23½ | 90*a* | 2 |
| E. Foley, Keene, R.R. 1 | Imp. Banner | 18 | 24 | 8 | 17 | 22½ | 89½ | |
| W. A. Nelson do | Danish Swede | 18 | 24 | 8 | 19 | 22 | 89*a* | |
| C. C. Nelson, Peterboro, R.R. 8 | do | 19 | 21 | 8½ | 19 | 23 | 88½*a* | 2, 15 |
| H. Reid, Lang, No. 19 | Banner | 15½ | 24 | 8½ | 20 | 20 | 88 | 11 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PETERBOROUGH.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| OTONABEE AGR. SOCIETY.—*Con.* | | | | | | | | |
| M. O'Keefe, Keene, R.R. 1 | Banner | 18½ | 23 | 7 | 16 | 23 | 87½ | 15 |
| Wm. Stewart, do R.R. 2 | Can. Pride | 18 | 23 | 8 | 19 | 21 | 87*a* | 4 |
| S. M. Comrie, Peterboro, R. R. 8 | Abundance | 18 | 19 | 8 | 20 | 21½ | 86½ | 2 |
| S. McIntyre, Keene, R.R. 2 | do | 15½ | 20 | 9 | 20 | 20½ | 85 | 2 |
| F. A. Eason, do R.R. 1 | Banner | 15 | 18 | 8 | 19 | 21 | 81 | 15, 14, 4 |
| R. A. Nelson, do R.R. 1 | Danish Swede | 16 | 20 | 8 | 18 | 19½ | 79½*a* | 2 |
| M. Pimmett, Indian River, R.R. 1 | Prince Royal | 19 | 16 | 7 | 15 | 23 | 78*a* | 2 |
| Wm. Bishop, Keene, R.R. 1 | Wide Awake | 13 | 20 | 10 | 19 | 17 | 77*a* | 11 |
| H. Weir, Lang | Banner | 15½ | 15 | 8 | 17 | 18½ | 74 | 2 |
| W. A. Drummond, Peterboro, R.R. 8 | do | 18½ | 10 | 7 | 19 | 19 | 73½ | 2 |
| Jno. E. Manley do | Abundance | 18 | 10 | 8 | 17 | 20 | 73 | 2 |
| Jno. Dinsdale, Keene, R.R. 1 | Wide Awake | 14 | 14 | 9 | 17 | 20 | 72*a* | 2 |
| PETERBOROUGH IND. AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. McNeil, Maple.* | | | | | | | | |
| R. A. Wilson, Peterborough | O. A. C. 72 | 17 | 23 | 8 | 19 | 22½ | 89½ | 15 |
| Wm. Steinkrauss, do R.R. 2 | New Century | 16 | 22 | 8 | 19 | 20 | 83*a* | 15 |
| Robt. Waller, do | Western | 16½ | 22 | 8 | 16 | 20 | 80½*a* | |
| S. T. Milburn, do R.R. 1 | O. A. C. 72 | 14½ | 22 | 7 | 18 | 18½ | 80 | |
| B. L. Tully, do R.R. 2 | do | 16 | 13 | 8 | 19 | 21 | 77 | 11, 1 |
| J. Gordon Mann, do R.R. 4 | Banner | 12½ | 21 | 8 | 18 | 15 | 74½ | 15 |
| S. Dickson, do | Sterling | 14 | 22 | 7 | 15 | 17½ | 73½*a* | 15 |
| H. H. Webber, do R.R. 3 | Banner | 14½ | 16 | 7 | 18 | 17½ | 73 | 2, 15 |
| J. O. Ball, do R.R. 3 | Sterling | 14½ | 14 | 7 | 18 | 19 | 70½*a* | 1, 15 |
| Geo. Fowler, do | O. A. C. 72 | 14 | 17 | 7 | 15 | 17½ | 70½ | 4, 11 |
| PRESCOTT. | | | | | | | | |
| ALFRED AGR. SOCIETY. | | | | | | | | |
| *Judge—J. D. McLennan, Lancaster.* | | | | | | | | |
| X. Chenier, Plantagenet | O. A. C. 72 | 18 | 24½ | 9 | 18 | 22 | 91½ | |
| E. St. Denis, do | Banner | 19 | 24 | 8 | 19 | 21 | 91 | |
| S. Parisien, Alfred | do | 17½ | 23 | 9 | 17 | 23 | 89½ | |
| Mrs. Jos. Robillard, do | do | 19 | 22 | 7 | 17 | 24 | 89 | |
| S. Chartrand, do | do | 19 | 24 | 7 | 17 | 21 | 88 | |
| A. Charbonneau, do | do | 16 | 23 | 8 | 18 | 22 | 87 | |
| F. H. Cadieux, L'Orignal | do | 16 | 21 | 8 | 19 | 22 | 86 | |
| M. Leroux, Plantagenet | do | 16½ | 23 | 5 | 18 | 23 | 85½ | |
| D. Charbonneau, Alfred | do | 16 | 21 | 7 | 18 | 23 | 85 | |
| A. Daoust, do | Washington | 15½ | 24 | 9 | 17 | 21 | 84½*a* | |
| J. Brisebois, do | Banner | 15 | 24 | 7 | 16 | 22 | 84 | |
| Oscar Parisien, do | do | 17 | 20 | 9 | 17 | 20 | 83 | |
| F. Prevost, Plantagenet | do | 15 | 21 | 8 | 18 | 20 | 82 | |
| Emmanuel Parisien, Alfred | do | 15 | 23 | 8 | 15 | 20 | 81 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PRESCOTT.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| ALFRED AGR. SOCIETY.—*Con.* | | | | | | | | |
| Jos. Parisien, Alfred | Banner | 17 | 21 | 9 | 16 | 17 | 80 | |
| A. Parisien, do | do | 14 | 20 | 8 | 16 | 21 | 79 | |
| Ovide Sauve, do | do | 15 | 18 | 9 | 15 | 19 | 76 | |
| O. Rouleau, do | do | 13 | 20 | 5½ | 15 | 22 | 75½ | |
| J. A. Cadieux, do | do | 14 | 15 | 8 | 18 | 19 | 74 | |
| Ferdinand Daoust, do | do | 17 | 20 | 4 | 17 | 14 | 72 | |
| PRINCE EDWARD. | | | | | | | | |
| AMELIASBURG AGR. SOCIETY. | | | | | | | | |
| *Judge—M. J. Casselman, Morrisburg.* | | | | | | | | |
| Jas. R. Anderson, Rossmore | Yel. Russian | 19 | 24 | 10 | 20 | 23½ | 96½ | |
| L. D. Wallbridge, do | Pride of Nashua | 19 | 24 | 9 | 19½ | 24¾ | 94¼*a* | 10 |
| Lewis Wallbridge, do | Banner | 18½ | 24 | 9 | 19 | 23½ | 94 | 15 |
| Jas. Hitchings, Rednersville | do | 18 | 24 | 8 | 18 | 23½ | 91½ | |
| F. Mottley, Rossmore | O. A. C. 72 | 17½ | 23 | 9 | 19 | 22½ | 91 | |
| Jas. S. Wallbridge, do | Yel. Russian | 18 | 22 | 9 | 18 | 22½ | 89½ | 4 |
| J. S. Barber, do | do | 18½ | 22 | 7 | 19 | 22½ | 89 | 4 |
| Jno. A. Weese, do | O. A. C. 72 | 18 | 23 | 9 | 17 | 21½ | 88½ | 4, 15 |
| Jno. A. Walters, do | do | 15 | 22 | 8 | 19 | 21½ | 85½ | 4 |
| E. E. Wallbridge, do | Banner | 16½ | 23 | 8 | 16 | 20½ | 84 | |
| Wm. Bedford, Ameliasburg | do | 17½ | 17 | 7 | 18 | 22½ | 82 | 4 |
| A. N. Hillman, Rossmore | do | 17 | 12 | 9 | 17 | 22½ | 77½ | 1 |
| D. H. Whitney, Consecon, R.R. 1 | Yel. Russian | 15 | 22 | 7 | 8 | 22½ | 74½ | |
| PRINCE EDWARD AGR. SOCIETY. | | | | | | | | |
| *Judge—M. D. Sullivan, Douro.* | | | | | | | | |
| Ed. B. Purtelle, Bloomfield | O. A. C. 72 | 20 | 25 | 10 | 19 | 24 | 98 | |
| M. G. Thompson, do | do | 18 | 25 | 10 | 19 | 25 | 97 | |
| Morris Huff, do | do | 19 | 25 | 8 | 20 | 24 | 96 | |
| B. R. Leavens, do | do | 19 | 24 | 10 | 19 | 23 | 95 | |
| A. McDonald & Son, do | do | 20 | 19 | 9 | 20 | 25 | 93 | 2, 15 |
| H. F. Hubb, do | do | 18½ | 20 | 10 | 20 | 24 | 92½ | 15 |
| W. H. Fox, Picton, R.R. 8 | Early Harvest | 17 | 23 | 10 | 20 | 24¼ | 92¼*a* | |
| O. Parks, Bloomfield, R.R. 1 | Banner | 18 | 23 | 8 | 18 | 25 | 92 | 15 |
| Peter Cave, do | O. A. C. 72 | 19 | 22 | 10 | 16 | 24 | 91 | 15 |
| M. Gilbert & Son, Demorestville, R.R. 3 | Mam. Cluster | 18 | 20 | 6 | 18 | 23 | 85 | 15 |
| A. B. Wilson, Bloomfield | O. A. C. 72 | 18 | 22 | 10 | 20 | 15 | 85 | 15 |
| M. W. Young, Woodrous | Banner | 18½ | 25 | 5 | 20 | 16½ | 85 | |
| W. H. Gough & Sons, Bloomfield | O. A. C. 72 | 19 | 24 | 9 | 10 | 23 | 85 | 15 |
| Amos McDonald, Picton, R.R. 1 | do | 19 | 18 | 5 | 20 | 20 | 82 | 15 |
| Matthie Bros., Bloomfield | do | 17 | .... | 10 | 20 | 23 | 70 | 1 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PRINCE EDWARD.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| SOPHIASBURG AGR. SOCIETY. | | | | | | | | |
| *Judge—M. D. Sullivan, Douro.* | | | | | | | | |
| K. Spafford, Picton, R.R. 8..... | Banner..... | 19 | 25 | 10 | 20 | 24 | 98 | |
| E. W. Gorsline, Demorestville..... | O. A. C. 72..... | 19 | 24 | 9 | 20 | 25 | 97 | |
| U. Nelson, do ..... | do ..... | 19 | 24 | 8 | 20 | 25 | 96 | 4 |
| T. A. Crawford, Picton, R.R. 8.. | Banner ..... | 20 | 22 | 9 | 19 | 25 | 95 | 10 |
| W. Rightmyer, do R.R. 8.. | do ..... | 19 | 20 | 10 | 20 | 23 | 92 | 10 |
| C. H. Kent, do R.R. 2.. | O. A. C. 72..... | 19 | 20 | 8 | 20 | 22 | 89 | 5 |
| A. Potter, Demorestville..... | do ..... | 20 | 23 | 4 | 16 | 23 | 86 | |
| T. W. Mills, Picton, R.R. 2..... | Banner..... | 20 | — | 10 | 19 | 23 | 72 | 1, 10, 4 |
| RAINY RIVER. | | | | | | | | |
| ATWOOD AGR. SOCIETY. | | | | | | | | |
| *Judge—M. F. Cook, Dryden.* | | | | | | | | |
| Carl Peters, Rainy River, Box 57.. | Banner..... | 16 | 20 | 6 | 15 | 22 | 79 | 15 |
| RENFREW. | | | | | | | | |
| ARNPRIOR AGR. SOCIETY. | | | | | | | | |
| *Judge—J. N. Sorley, Ottawa, R.R. 1.* | | | | | | | | |
| D. G. Campbell, Arnprior..... | Banner ..... | 18 | 24 | 6 | 19 | 22 | 89 | |
| D. J. Campbell, do ..... | do ..... | 18½ | 22 | 7 | 18 | 21 | 86½ | 10 |
| J. O. C. Havey, do ..... | O. A. C. 72..... | 16½ | 24 | 6 | 19 | 20 | 85½ | |
| J. Rafter, do ..... | Banner ..... | 16½ | 21 | 8½ | 17 | 19½ | 82½ | 15 |
| Wm. Young, do ..... | do ..... | 16 | 23 | 7 | 13½ | 20½ | 80 | 15 |
| A. Scheel, do ..... | do ..... | 15½ | 20 | 7 | 17 | 20 | 79½ | 10, 4 |
| A. Cavers, do ..... | do ..... | 15 | 20 | 6 | 18 | 19 | 78 | 4, 10 |
| A. N. Storie, do ..... | do ..... | 14 | 20 | 7 | 17 | 19 | 77 | 10, 15 |
| S. A. Fraser, do R.R. 2.. | do ..... | 17½ | 15 | 7 | 14 | 21½ | 75 | 1, 15 |
| Jas. Findlay, do ..... | do ..... | 13½ | 18 | 8 | 17 | 18 | 74½ | 4 |
| RENFREW AGR. SOCIETY. | | | | | | | | |
| *Judge—J. N. Sorley, Ottawa, R.R. 1.* | | | | | | | | |
| Jno. Stewart, Renfrew, R.R. 5... | O. A. C. 72..... | 17 | 23 | 7½ | 19 | 19 | 85½ | |
| R. A. McDermid, do ..... | Granary Filler.... | 17½ | 21 | 8 | 16 | 20 | 82½ | 15 |
| J. F. Blain, do ..... | O. A. C. 72..... | 15½ | 21 | 8 | 18 | 18½ | 81 | 11 |
| Jas. Humphries, do ..... | Banner..... | 16 | 22 | 6 | 17 | 19 | 80 | |
| J. H. Fraser, Newfield..... | O. A. C. 72..... | 14 | 22 | 7 | 19 | 17 | 79 | 15, 11 |
| Geo. A. Peever, Renfrew, R.R. 3.. | Banner..... | 16 | 25 | 4 | 15 | 18 | 78 | |
| G. McIntyre, do ..... | ..... | 14 | 20½ | 6½ | 19 | 18½ | 76½*a* | 10 |
| J. L. Miller & Son, Glasgow..... | Banner..... | 13½ | 16 | 9 | 16 | 17½ | 72 | 10 |
| A. Jamieson, Renfrew ..... | Siberian..... | 14½ | 18 | 6 | 17 | 18 | 71½*a* | 15, 10 |
| P. Hamilton, do ..... | ..... | 13½ | 20 | 5 | 18 | 16 | 70½*a* | 2, 15 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| SIMCOE. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| BARRIE AGR. SOCIETY. | | | | | | | | |
| *Judge—D. W. Clubine, Richmond Hill, R.R. 1.* | | | | | | | | |
| Thos. G. Scythes, Thornton | Imp. Banner | 19 | 23 | 9 | 20 | 24 | 95 | 15 |
| F. J. Frankcom, Midhurst | O. A. C. 72 | 18½ | 24 | 9 | 19 | 24 | 94½ | 15 |
| B. B. Warnica, Allandale, R.R. 1 | Banner | 18½ | 23 | 8½ | 19 | 24 | 93 | 15 |
| R. D. Coutts, Midhurst | O. A. C. 72 | 18 | 22 | 9 | 19 | 24 | 92 | 15, 10 |
| R. A. Sutherland, Stroud | Imp. Banner | 18½ | 20 | 9 | 19 | 24 | 90½ | 2 |
| W. L. Russell, Midhurst | Granary Filler | 17 | 22 | 9 | 18 | 24 | 90 | 4, 15 |
| Geo. D. Coutts, do | O. A. C. 72 | 17 | 22 | 8 | 19 | 23 | 89 | 15, 10 |
| A. A. Garvin, do | do | 16½ | 20 | 8½ | 19 | 24 | 88 | 1 |
| Jas. J. Orok, do | Imp. Banner | 16 | 20 | 9 | 18 | 24 | 87 | 15 |
| Jas. Spence, do | O. A. C. 72 | 17 | 19 | 9 | 18 | 22 | 85 | 1, 15, 10 |
| F. J. Carson, Barrie, R.R. 2 | Banner | 15 | 18 | 9 | 19 | 23 | 84 | 1 |
| A. R. Orchard, Minesing | O. A. C. 72 | 16 | 18 | 9 | 18 | 22 | 83 | 1, 15 |
| C. C. Hodges, Shanty Bay, R.R. 1 | Banner | 15½ | 20 | 7 | 18 | 21½ | 82 | 13, 15 |
| I. H. Luck, Barrie, R.R. 1 | do | 15 | 16 | 8 | 18 | 21 | 78 | 2, 1 |
| R. N. Hickling, do R.R. 2 | O. A. C. 72 | 14½ | 14 | 7 | 18 | 20½ | 74 | 2 |
| COLDWATER AGR. SOCIETY. | | | | | | | | |
| *Judge—D. W. Clubine, Richmond Hill, R.R. 1.* | | | | | | | | |
| C. Greatrix, Waubaushene, R.R. 1 | O. A. C. 72 | 18 | 25 | 9 | 20 | 23 | 95 | 15 |
| C. A. Goss, Coldwater, R.R. 3 | Banner | 19 | 23 | 9 | 19 | 24 | 94 | 15 |
| O. Swan, Victoria Harbor, R.R. 1 | O. A. C. 72 | 19 | 24 | 9 | 14 | 24 | 90 | 15 |
| D. C. Lovering, Coldwater | Ligowa | 19 | 15 | 9 | 19 | 25 | 85*a* | 1 |
| T. D. Robinson, Moonstone | | 16 | 16 | 10 | 19 | 23 | 82*a* | 4 |
| Jas. Mercer, Coldwater, R.R. 3 | Banner | 15½ | 16 | 7 | 18 | 21 | 77½ | 1 |
| J. J. Shields, Waubaushene, R.R. 1 | Golden Drop | 17 | 10 | 8 | 16 | 23¼ | 72¼*a* | 1,10,15,4, 14 |
| W. J. Walker, Coldwater, R.R. 3 | O. A. C. 72 | 14 | 10 | 7 | 19 | 22 | 72 | 2, 4, 14 |
| Chas. Lovering, Lawson | Newmarket | 15 | 12 | 8 | 18 | 20 | 71*a* | 2, 14, 15 |
| SUDBURY. | | | | | | | | |
| WARREN AGR. SOCIETY. | | | | | | | | |
| *Judge—G. H. Farmer, S. S. Marie, R.R. 2.* | | | | | | | | |
| E. A. Bartlett, Warren | O. A. C. 72 | 18¼ | 24 | 9 | 19 | 23½ | 93¾ | |
| G. Nicholson, do | Reg. Banner | 16½ | 24½ | 9 | 19½ | 20 | 89½ | 15 |
| P. Giroux, do | Banner | 17¼ | 24 | 7 | 17 | 23 | 88¼ | |
| Bert Batsford, do Box 41 | O. A. C. 72 | 18 | 24 | 7 | 16 | 23 | 88 | |
| F. McDonald, do Box 37 | do | 15½ | 24 | 7½ | 18 | 22 | 87 | 15 |
| F. Anderson, do | do | 15 | 24 | 8 | 17 | 22 | 86 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| SUDBURY.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| WARREN AGR. SOCIETY.—*Con.* | | | | | | | | |
| W. E. Blair, Warren | O. A. C. 72 | 16½ | 21½ | 8 | 17 | 22 | 85 | 15 |
| W. Dixon, do | do | 16 | 22 | 7 | 17 | 22 | 84 | 10 |
| Jno. Montgomery, do | do | 17½ | 18 | 8 | 17 | 23 | 83½ | 15, 17 |
| R. A. Bartlett, do Box 172 | do | 14½ | 21 | 8½ | 18 | 20 | 82 | 15 |
| A. Wm. Woods, do | Gold Rain | 14½ | 24 | 8 | 17 | 20 | 81½*a* | 15, 17 |
| Dennis Shea, do | O. A. C. No. 3 | 14½ | 23 | 7 | 17 | 20 | 79½*a* | 15 |
| E. Curry, do | O. A. C. 72 | 16 | 20 | 7 | 16 | 20½ | 79½ | 15 |
| M. La Plante, do | do | 14½ | 22 | 7 | 16 | 20 | 79½ | 15 |
| K. Monroe, do | do | 15 | 23 | 5 | 16 | 20 | 79 | 15 |
| J. H. Ouelette, do | Banner | 14½ | 23 | 6 | 15 | 20 | 78½ | 15 |
| H. Montgomery, do | O. A. C. 72 | 14½ | 20 | 8 | 15 | 20 | 77½ | 15, 17 |
| B. Monroe, do | do | 13½ | 20 | 6 | 16 | 19 | 74½ | 15 |
| H. Desbien, do | do | 14½ | 15 | 8 | 17 | 19½ | 74 | 7, 15 |
| TEMISKAMING. | | | | | | | | |
| CHARLTON AGR. SOCIETY. *Judge—Geo. B. Little, Agincourt.* | | | | | | | | |
| O. Attwater, Charlton | Banner | 16½ | 24 | 8½ | 19 | 19½ | 87½ | |
| B. Bailey, do | Victory | 16½ | 24 | 8 | 19½ | 19 | 85*a* | |
| H. T. Kenny, do | O. A. C. 72 | 14¾ | 24 | 8½ | 18¾ | 19 | 84¾ | |
| J. M. McFarlane, do | Banner | 15½ | 24 | 8½ | 17 | 19½ | 84½ | 15 |
| F. P. Hollingshead, do | Abundance | 15 | 24 | 7½ | 19 | 18 | 83½ | |
| H. W. Netherton, Brentha | Banner | 17 | 22 | 8½ | 17 | 18½ | 83 | 15 |
| F. Pummell, Charlton | do | 14 | 22 | 8½ | 19 | 19 | 82½ | 15 |
| W. J. Netherton, Brentha | do | 16 | 21 | 8½ | 17 | 19 | 81½ | |
| Jno. Mornisay, Costello | O. A. C. 72 | 14½ | 23 | 8 | 18 | 18 | 81½ | |
| W. Rodgers, Charlton | do | 15 | 22 | 7½ | 17 | 17½ | 79 | |
| S. Rodgers, do | do | 16½ | 20 | 7 | 17 | 18 | 78½ | |
| A. McFarlane, do | Banner | 14 | 20 | 8 | 17 | 18 | 77 | 1 |
| P. Cuddy, Costello | do | 12 | 23½ | 7½ | 17 | 16½ | 76½ | |
| Geo. Gillett, Brentha | Abundance | 13½ | 20 | 7 | 17 | 17 | 74½ | 15, 9 |
| Bert Nickerson, Charlton | O. A. C. 72 | 12½ | 19 | 7½ | 17 | 16 | 72 | 15 |
| COCHRANE AGR. SOCIETY. *Judge—Geo. B. Little, Agincourt.* | | | | | | | | |
| W. Chalmers, Cochrane | Banner | 14½ | 24 | 8½ | 18½ | 18 | 83½ | |
| P. H. Ouimett, do | do | 16½ | 22 | 7 | 17 | 19½ | 82 | 2 |
| A. Hewson, do | do | 16½ | 23 | 7 | 15 | 18½ | 80 | |
| R. Nixon, do | do | 15½ | 23 | 7 | 16 | 18 | 79½ | |
| H. Rowan, Clute | Western No. 1 | 15½ | 22 | 6½ | 18½ | 17½ | 78*a* | |
| Neil McPhee, Cochrane | Banner | 14½ | 21 | 7 | 16 | 18 | 76½ | 15 |
| Wm. R. Gardner, do | do | 13½ | 22 | 7½ | 16 | 16½ | 75½ | 2 |
| O. Sigouin, do | do | 14½ | 21 | 7 | 16 | 16 | 74½ | 12 |
| Jno. Sawey, do | do | 12½ | 23 | 7 | 16 | 14½ | 73 | |
| R. Foster, Clute | do | 11 | 23 | 6½ | 17 | 14 | 71½ | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| TEMISKAMING.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| ENGLEHART AGR. SOCIETY. *Judge—R. L. Moorhouse, Sudbury.* | | | | | | | | |
| A. W. Skinner, Englehart | O. A. C. 72 | 19 | 25 | 8 | 20 | 24½ | 96½ | |
| T. J. Sword, Heaslip | do | 20 | 23 | 8 | 20 | 24 | 95 | |
| R. H. Emrick, do | Gold Rain | 20 | 25 | 8 | 20 | 23 | 94*a* | |
| Geo. Harman, do | Banner | 20 | 25 | 5 | 18 | 20 | 88 | |
| Jno. E. Howard, do | do | 16 | 20 | 8 | 20 | 22½ | 86½ | 15 |
| H. Johnston, Marter | O. A. C. 72 | 16 | 20 | 8 | 20 | 22 | 86 | 15 |
| Wm. Anyan, Englehart | do | 15 | 20 | 6 | 18 | 19 | 78 | 1 |
| E. Winlaw, Evanturel | Banner | 15 | 15 | 6 | 18 | 22 | 76 | |
| J. H. Kerr, Heaslip | do | 12 | 20 | 7 | 16 | 19 | 74 | |
| Jno. Allen, do | Gold Rain | 14 | 15 | 6 | 18 | 22 | 73*a* | |
| Jos. Schaffner, Brentha | O. A. C. No. 3 | 14 | 20 | 8 | 10 | 21 | 73 | |
| Chas. Sutton, Englehart | O. A. C. 72 | 14 | 20 | 5 | 15 | 17 | 71 | |
| W. S. Edward, do | Banner | 8 | 20 | 10 | 15 | 17 | 70 | |
| THUNDER BAY. OLIVER AGR. SOCIETY. *Judge—G. W. Collins, Fort. William.* | | | | | | | | |
| Roy Bingham, Murillo | Banner | 18½ | 24 | 7½ | 19 | 21 | 90 | |
| W. W. Fenton, do | do | 17½ | 23 | 8 | 18 | 21½ | 88 | |
| Jno. McDonald, do | do | 17 | 22 | 8 | 18 | 21½ | 86½ | |
| Sam'l McNally, do | do | 16 | 23 | 8 | 18 | 21 | 86 | |
| J. W. Fenton, do | do | 17 | 22 | 8 | 16 | 21 | 84 | |
| R. B. Martyn, do | do | 15 | 23 | 7 | 18 | 19 | 82 | |
| Thos. Yelland, do | do | 13 | 22 | 8 | 18 | 20 | 81 | |
| R. R. Everett, do | do | 16 | 23 | 6 | 16 | 18½ | 79½ | |
| Cecil Scott, do | do | 14½ | 22 | 7 | 16 | 19½ | 79 | |
| C. H. McNally, do | Rennie's E.Yielder | 16 | 23 | 7 | 15 | 19 | 78*a* | |
| Ross McKenzie, do | Banner | 15 | 21 | 7 | 15 | 20 | 78 | |
| A. Todd, do | do | 14½ | 22 | 7 | 15 | 19 | 77½ | |
| F. Cook, do | do | 14 | 22 | 7 | 15 | 19 | 77 | |
| Geo. Munroe, do | do | 14½ | 22 | 6 | 16 | 18½ | 77 | |
| Wm. Reid, do | do | 14 | 22 | 7 | 16 | 17 | 76 | |
| Jas. Stevenson, do | do | 13½ | 20 | 6 | 17 | 17½ | 74 | |
| Wm. White, do | do | 14 | 22 | 6 | 14 | 18 | 74 | |
| Alex. Trotter, Baird | Abundance | 14 | 22 | 5 | 14 | 18 | 73 | |
| H. J. Carter, Murillo | Banner | 14 | 21 | 6 | 14 | 17 | 72 | |
| A. Felker, do | do | 13½ | 20 | 7 | 14 | 17 | 71½ | |
| Wm. Sim, do | do | 13 | 15 | 7 | 16 | 20 | 71 | 15 |
| Jos. Hughes, do | do | 15 | 22 | 5 | 12 | 16½ | 70½ | |
| R. J. Martyn, do | do | 12 | 20 | 6 | 14 | 18 | 70 | 15 |
| A. Nordland, do | do | 12 | 21 | 7 | 14 | 16 | 70 | |
| Thos. Fawcett, do | do | 14 | 22 | 5 | 12 | 17 | 70 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| THUNDER BAY.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| WEST ALGOMA AGR. SOCIETY. | | | | | | | | |
| *Judge—Robt. McKenzie, Murillo.* | | | | | | | | |
| Jas. Wilson, Port Arthur | Banner | 18 | 20 | 8 | 17 | 23 | 86 | |
| D. J. Piper, Fort William, R.R. 1. | do | 17 | 23 | 9 | 9 | 23 | 81 | |
| Jno. Otway, do | do | 16 | 16 | 8 | 17 | 22½ | 79½ | |
| H. Cork, Gen. Del., Port Arthur | do | 13 | 21 | 9 | 16 | 20 | 79 | |
| A. Perrier, Baird | do | 15 | 21 | 8 | 15 | 19 | 78 | |
| S. Perrier, do | do | 15 | 21 | 8 | 15 | 18 | 77 | |
| G. F. Schofield, Fort William | Garton's No. 22 | 13 | 20 | 8 | 15 | 19 | 73*a* | |
| WHITEFISH VALLEY AGR. SOCIETY. | | | | | | | | |
| *Judge—Robt. McKenzie, Murillo.* | | | | | | | | |
| A. G. Forrest, Hymers | O. A. C. 72 | 17 | 22 | 9 | 19 | 21 | 88 | |
| W. Hymers, do | Leader | 17 | 22 | 7 | 19 | 21 | 84*a* | |
| F. Sitch, do | O. A. C. 72 | 16½ | 19 | 9 | 18 | 19 | 81½ | |
| H. Hausen, do | do | 16 | 18 | 7 | 18 | 19 | 78 | |
| Thos. Thatcher, do | Banner | 13 | 18 | 7 | 17 | 22 | 77 | |
| J. Woods, South Gillies | Leader | 15 | 14½ | 8 | 18 | 23 | 76½*a* | |
| H. Wheal, Hymers | O. A. C. 72 | 15 | 20 | 7 | 9 | 20 | 71 | |
| VICTORIA. | | | | | | | | |
| EMILY AGR. SOCIETY. | | | | | | | | |
| *Judge—H. E. Redner, Rednersville.* | | | | | | | | |
| A. McQuade, Omemee | Banner | 18 | 23½ | 8½ | 19 | 22½ | 91½ | 15 |
| D. H. Dick, do R.R. 2 | O. A. C. 72 | 17½ | 21 | 9½ | 19 | 23½ | 90½ | 2, 15 |
| Bert Sanderson, do | Abundance | 17 | 20 | 8 | 19 | 22 | 86 | 15, 4 |
| Harold Dick, do R.R. 2 | O. A. C. 72 | 15½ | 20 | 9 | 19 | 21 | 84½ | 4, 10 |
| E. Switzer, do | Banner | 19½ | 8 | 9 | 19 | 25 | 80½ | 2, 4, 1 |
| N. Fee, do | do | 14½ | 17 | 8 | 19 | 21⅓ | 80 | 15, 11 |
| I. W. Fee, do | do | 14½ | 19 | 7 | 17½ | 21½ | 79½ | 11, 15 |
| C. Downey, Downeyville | do | 14 | 20 | 7 | 17 | 21 | 79 | 10, 4, 15 |
| W. Burgess, Omemee | do | 19 | 9 | 9 | 18 | 23 | 78 | 2, 4, 11, 1 |
| Robt. T. Boyd, do R.R. 2 | do | 17 | 9 | 8 | 18 | 21 | 13 | 2, 4 |
| WELLAND. | | | | | | | | |
| FENWICK AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. Boyd, Pickering, R.R. 2* | | | | | | | | |
| A. E. Howell, Fenwick, R.R. 5 | O. A. C. 72 | 18 | 23½ | 8 | 19 | 23½ | 92 | 15 |
| Geo. W. Haist, Fonthill, Box 867 | do | 14½ | 23½ | 9 | 19 | 22 | 88 | 15 |
| Geo. Kappler, Fenwick, R.R. 5 | do | 14 | 21½ | 9 | 19 | 22½ | 86 | 14 |
| O. L. Beckett, Ridgeville, R.R. 1 | Am. Banner | 15 | 20½ | 9 | 19 | 21½ | 85 | 14, 15, 10 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| WELLAND.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| FENWICK AGR. SOCIETY.—*Con.* | | | | | | | | |
| Jos. M. Lippert, Fenwick | O. A. C. 72 | 13 | 23 | 8 | 19 | 21½ | 84½ | 14 |
| Chas. A. Bowman, do R.R. 1 | do | 13 | 22 | 8 | 19 | 22 | 84 | 15 |
| J. M. Haist, Ridgeville, R.R. 1 | do | 12½ | 22 | 8½ | 19 | 21 | 83 | |
| F. Haist, do R.R. 1 | do | 14 | 22 | 6 | 19 | 21½ | 82½ | 14 |
| W. R. Hall, Fenwick, R.R. 5 | Alaska | 14½ | 19 | 9 | 18½ | 22½ | 81½*a* | 10, 15, 14 |
| H. Stirtzinger, do | O. A. C. 72 | 14 | 19 | 8 | 19 | 21½ | 81½ | 10, 15, 14 |
| Clement Bros., do | Am. Banner | 15 | 22 | 8½ | 10 | 22 | 77½ | 15 |
| WELLINGTON. | | | | | | | | |
| ERIN AGR. SOCIETY. | | | | | | | | |
| *Judge—E. I. McLoughry, Markdale.* | | | | | | | | |
| D. S. Sinclair, Erin | Banner | 19 | 25 | 8 | 19½ | 23 | 94½ | |
| S. E. Griffin & Son, Acton | do | 18½ | 22 | 9½ | 19½ | 23½ | 93 | 2 |
| Jas. McKitrick, Orton | do | 16½ | 24 | 9 | 19½ | 22½ | 91½ | |
| J. L. Overland, Erin | do | 18½ | 23 | 9 | 17 | 22½ | 90 | 15, 4 |
| E. Barbour, Hillsburg | O. A. C. 72 | 19 | 23 | 9½ | 15 | 23 | 89½ | 15 |
| McFee Bros., Erin | Banner | 17 | 21 | 8½ | 18½ | 23½ | 88½ | 15 |
| S. W. Bingham & Sons, Hillsburg | do | 18½ | 14 | 9½ | 20 | 23 | 85 | 2 |
| R. D. Nodwell, do | do | 17½ | 22 | 6½ | 16 | 22½ | 84½ | 15 |
| Geo. Wheeler & Sons, do | do | 16½ | 20 | 8 | 17 | 22½ | 84 | 2, 15 |
| H. L. Matheson, do | O. A. C. 72 | 18 | 20½ | 7 | 15 | 23 | 83½ | 2 |
| M. Leitch, Guelph, R.R. | Banner | 18½ | 12 | 9½ | 19½ | 23½ | 83 | 2, 10 |
| Geo. Overland, Orton | do | 18 | 19 | 5 | 16 | 22½ | 80½ | 15, 2 |
| Jas. Milloy, Erin | do | 18 | 13 | 8 | 18 | 22½ | 79½ | 10, 2, 15 |
| F. McMillan, Hillsburg | do | 17 | 12 | 9 | 18 | 22½ | 78½ | 10, 4, 2 11, 1 |
| MOUNT FOREST AGR. SOCIETY. | | | | | | | | |
| *Judge—A. E. Myles, Kimberley.* | | | | | | | | |
| Thos. Dingwall, Holstein, R.R. 3 | Banner | 15 | 25 | 8 | 20 | 24 | 92 | |
| Robt. Sim, do | do | 17 | 23 | 8 | 20 | 23 | 91 | 15 |
| A. Kirkness, Mt. Forest, R.R. 5 | Granary Filler | 17 | 21 | 9 | 19 | 23 | 89 | 2, 15 |
| Jno. Caulfield, do R.R. 2 | Early Yielder | 15 | 25 | 8 | 20 | 22 | 88*a* | |
| Geo. W. Crow, Clifford, R.R. 3 | Banner | 15 | 25 | 6 | 20 | 21 | 87 | |
| Jno. D. Ross, Mt. Forest, R.R. 1 | O. A. C. 72 | 14 | 17 | 8 | 19 | 22 | 80 | 2 |
| A. Hutchinson, do R.R. 4 | | 15 | 15 | 9 | 20 | 22 | 79*a* | 2, 10 |
| Jno. Ghent, do R.R. 5 | O. A. C. 72 | 15 | 18 | 7 | 17 | 21 | 78 | 2 |
| W. J. Wallace, do R.R. 2 | do | 13 | 15 | 7 | 18 | 22 | 75 | 11, 2, 15, 10 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| WENTWORTH. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| ANCASTER AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. D. Steen, Meadowvale.* | | | | | | | | |
| J. S. Howell, Jerseyville, R.R. 1 | O. A. C. 72 | 17 | 23 | 9 | 18 | 22 | 89 | |
| Jas. Oakes, Ancaster, R.R. 2 | do | 17 | 22 | 8 | 18 | 23 | 88 | |
| N. W. Shaver, do R.R. 1, Box 74 | Banner | 15 | 22 | 8 | 17½ | 22 | 84½ | 12 |
| E. Lyons, do | O. A. C. 72 | 16 | 21 | 7 | 17½ | 22 | 83½ | 15, 10 |
| W. C. Whitfield, Dundas, R.R. 3 | do | 16 | 19 | 8 | 18 | 22 | 83 | 10, 15 |
| C. A. Alderson, Ryckman Corners | Banner | 17 | 16 | 8 | 18½ | 22½ | 82 | 2, 10, 15 |
| J. T. English, Ancaster | Derby | 14 | 20 | 8 | 19 | 22 | 81*a* | 10 |
| W. H. English, do R.R. 1 | O. A. C. 72 | 15 | 18 | 8 | 18 | 20 | 79 | 15, 10 |
| J. T. McNiven, do R.R. 2 | do | 14 | 18 | 8 | 18 | 20 | 78 | 10, 15 |
| WEST FLAMBORO AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. D. Steen, Meadowvale.* | | | | | | | | |
| Jas. A. Gray, Freelton | Banner | 17 | 23 | 9 | 18 | 22 | 89 | |
| T. W. Lambier, Millgrove | Reg. Banner | 16 | 23 | 8 | 19 | 22 | 88 | 15 |
| H. Balison, Puslinch, R.R. 3 | Granary Filler | 17 | 23 | 8 | 18 | 21 | 87 | |
| C. W. Goodbrand, Hamilton, R.R.2 | Reg. Banner | 16 | 21 | 8 | 18 | 22 | 85 | 15 |
| Jas. Beaton, do | O. A. C. 72 | 16 | 18 | 8 | 18½ | 22½ | 83 | 2, 15 |
| Thos. George, Millgrove, R.R. 1 | Scottish Chief | 16 | 22 | 7 | 17 | 22 | 82*a* | |
| Geo. E. Kirk, Hamilton, R.R. 2 | Swedish Giant | 16 | 21 | 8 | 16 | 22 | 81*a* | 12 |
| F. W. Medwin, Greensville | Yel. Russian | 15 | 20 | 7 | 16½ | 21½ | 80 | 15 |
| E. Fulton, Harper's Corners | Granary Filler | 14 | 19 | 7 | 18 | 21 | 79 | 2, 15 |
| H. L. Bogle, Puslinch, R.R. 3 | Mam. Cluster | 16 | 15 | 8 | 17 | 22 | 78 | 2, 15 |
| R. W. Lothian, do | Yel. Russian | 15 | 15 | 8 | 17 | 22 | 77 | 1, 15 |
| YORK. | | | | | | | | |
| RICHMOND HILL AGR. SOCIETY. | | | | | | | | |
| *Judge—M. W. Sexsmith, Ridgeway.* | | | | | | | | |
| F. A. Clark, Gormley, R.R. | O. A. C. 72 | 20 | 23 | 8 | 19½ | 23½ | 94 | 4 |
| Wm. Woods, Maple, R.R. 2 | Mam. Cluster | 19½ | 22 | 9½ | 17 | 22½ | 90½ | 15 |
| Carl James, Richmond Hill, R.R. 1 | Banner | 20 | 20½ | 9½ | 18 | 21½ | 89½ | 15, 4 |
| D. Cameron, Elgin Mills | Imp. Banner | 17½ | 24 | 9 | 18 | 20½ | 89 | 15 |
| Chas. Jones, Maple, R.R. | Banker | 17 | 24 | 8 | 16 | 22 | 85*a* | 15 |
| Wm. Burns, do R.R. | New Banker | 19 | 22 | 8 | 16 | 21½ | 84½*a* | |
| Wm. J. Oliver, do | Banner | 15 | 22 | 9 | 18 | 20 | 84 | 1 |
| Arch. Savage, Richmond Hill | O. A. C. 72 | 17 | 20 | 9 | 14 | 20 | 80 | 10 |
| J. S. McNair, Elgin Mills | Imp. Ligowa | 17 | 20 | 9 | 14 | 21 | 79*a* | 10, 14 |
| J. Brillinger, Richmond Hill | Mam. Cluster | 20 | .... | 9½ | 19 | 25 | 73½ | 2, 15 |
| L. E. Case, Aurora | Imp. Banner | 16½ | 8 | 8 | 18 | 22 | 72½ | 2, 15 |
| T. E. Boynton, Gormley | do | 18½ | .... | 10 | 19 | 23½ | 71 | 2, 1 |
| Robt. Millen, Maple, R.R. 2 | O. A. C. 72 | 18 | .... | 9 | 19 | 24 | 70 | 2, 14 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | †Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| YORK.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| SCARBORO AGR. SOCIETY. *Judge—M. W. Sexsmith, Ridgeway.* | | | | | | | | |
| McCowan Bros., Scarboro | Yel. Russian | 19 | 23 | 8 | 20 | 24½ | 94½ | |
| J. M. T. Weir, Agincourt | Granary Filler | 20 | 23 | 10 | 18 | 23 | 94 | 15 |
| Jas. Scott, do | Imp. Banner | 17¼ | 22 | 9 | 19 | 23½ | 90¾ | 1 |
| Wm. Loveless, Scarboro Jct. | Reg. Banner | 19 | 23 | 9½ | 16 | 23 | 90½ | 15 |
| H. K. Clark, Agincourt | Banner | 20 | 15 | 10 | 19½ | 24 | 88½ | 2 |
| W. A. Paterson, do | do | 20 | 14½ | 10 | 19¾ | 24 | 88¼ | 1 |
| A. P. Wheler, do | Granary Filler | 19 | 22 | 9 | 16 | 22 | 88 | 10 |
| J. S. Baird, Scarboro Jct. | O. A. C. 72 | 19½ | 14 | 10 | 19½ | 24 | 87 | 2, 15 |
| J. S. Lawrie, Agincourt | Granary Filler | 19 | 10 | 9½ | 19 | 24 | 81½ | 1, 2, 10 |
| W. G. Rennie, do | O. A. C. 72 | 19¼ | 8 | 10 | 19 | 23 | 79¼ | 15, 2 |
| H. P. Elliott, do | Banner | 18½ | 8 | 10 | 18 | 22 | 76½ | 4, 1, 2 |
| F. J. Fisher, do | Granary Filler | 20 | .... | 9 | 19 | 23 | 71 | 2, 10, 4 |
| WOODBRIDGE AGR. SOCIETY. *Judge—M. W. Sexsmith, Ridgeway.* | | | | | | | | |
| W. G. Witherspoon, Woodbridge | O. A. C. 72 | 18 | 24 | 9½ | 14 | 24 | 89½ | |
| J. W. Woods, do | do | 18½ | 23½ | 8 | 15 | 23 | 88 | 14, 15 |
| Geo. Brownley, do | Banner | 20 | 12 | 9 | 18½ | 23 | 82⅔ | |
| J. N. Snider, do | Am. Banner | 19 | 11 | 9 | 14 | 27 | 80 | 2, 10, 4 |
| A. Bagg, Edgley | Elmhurst | 20 | 10 | 9½ | 16 | 25 | 78½ | 2 |
| Jas. Bagg & Son, Edgley | do | 19½ | 10 | 9½ | 16 | 24 | 77 | 2 |
| A. Cameron, Woodbridge, R.R. 2. | O. A. C. 72 | 18½ | 9 | 9 | 18 | 22 | 76½ | 1, 2, 4 |
| Chas. McNeil, Maple | Banner | 18 | 8 | 9½ | 19 | 21 | 75½ | 2, 10 |
| A. L. McNeil, Woodbridge | O. A. C. 72 | 19 | 8 | 8 | 17 | 23 | 75 | 2, 15, 4 |
| A. Farr, do | Am. Banner | 15 | 12 | 8 | 17 | 22½ | 74½ | 15, 10 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### FALL WHEAT.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| BRUCE. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| TEESWATER AGR. SOCIETY. | | | | | | | | |
| *Judge—Archie Greer, Mansfield, R.R. 1.* | | | | | | | | |
| A. & W. McKague, Teeswater... | Dawson's G. Chaff | 17 | 22½ | 8 | 19 | 22 | 88½ | |
| Harold Smyth, Greenock, R.R. 1.. | do | 16 | 23 | 8 | 18 | 23 | 88 | 14 |
| Alex. McLennan, Teeswater, R.R.2 | do | 16½ | 21 | 8 | 19 | 22½ | 87 | 10 |
| J. S. Armstrong, Formosa, R.R. 1. | do | 15½ | 22 | 8 | 18 | 22 | 85½ | 14, 15, 16 |
| T. B. Aitken, Teeswater, R.R. 2... | do | 15½ | 20 | 7 | 19 | 20 | 81½ | 14, 15, 16 |
| Leslie Howe, Formosa, R.R. 1.... | do | 14 | 22 | 7 | 18 | 20 | 81 | 15, 16 |
| F. Wocks, Teeswater..... | do | 15 | 20 | 8½ | 17 | 20 | 80½ | 3, 14 |
| J. D. Little, 354, Teeswater..... | do | 14 | 22 | 6 | 18 | 19 | 79 | 14, 15 |
| T. Goodfellow, do R.R. 1 | do | 14 | 22 | 7 | 17 | 19 | 79 | 9 |
| D. Macdonald, do ..... | do | 13 | 22 | 7 | 16 | 20 | 78 | 15 |
| Archie Jarvis, do ..... | do | 14 | 20 | 7 | 18 | 19 | 78 | 3, 9, 14, 16 |
| T. P. McDonald, do R.R. 3 | do | 13 | 16 | 7 | 18 | 19 | 73 | 9, 11, 14 |
| DURHAM. | | | | | | | | |
| MILLBROOK AGR. SOCIETY. | | | | | | | | |
| *Judge—Geo. McKague, Woodville.* | | | | | | | | |
| Geo. Boner, Millbrook, R.R. 1.... | Dawson's G. Chaff | 18½ | 18 | 9½ | 19 | 24 | 89 | 12, 1 |
| Harold Tait, do .... | do | 16 | 22 | 9 | 18½ | 22 | 88½ | 4, 16 |
| L. H. Winslow, Ida..... | do | 17 | 21½ | 9½ | 18 | 22 | 88 | 14, 15 |
| W.R. N. Sharp, do ..... | do | 15½ | 23 | 8½ | 19 | 21½ | 87½ | 4, 15 |
| W. T. Donaldson, Millbrook, R.R. 1 | do | 16 | 21 | 9½ | 19½ | 21 | 87 | 4, 10, 16 |
| J. H. McGill, do R.R. 1 | Golden Amber.... | 16½ | 20½ | 9½ | 19½ | 22 | 86*a* | 4, 16 |
| W. W. Kennedy, do R.R. 2 | Dawson's G. Chaff | 16 | 21 | 9 | 18 | 21½ | 85½ | 4, 10 |
| Jas. Whitington, S. Monaghan.... | do | 18 | 18 | 8 | 19 | 22 | 85 | 1, 4 |
| D. A. Henry, Millbrook, R.R. 2 | do | 16 | 20½ | 9 | 18 | 21½ | 85 | 4, 10 |
| Jas. Eagleson, do R.R. 2 | do | 17 | 21 | 9 | 16 | 21½ | 84½ | 4, 9, 11, 16 |
| R. J. McKnight, do ..... | do | 18 | 15 | 9 | 19 | 23 | 84 | 1, 3, 4, 10 |
| W. Elson, Fraserville..... | do | 16 | 21 | 9 | 17 | 20½ | 83½ | 1 |
| T. A. Kelly, do ..... | do | 18 | 16 | 8 | 19 | 22½ | 83½ | 1, 4 |
| Wm. McKnight, Millbrook..... | do | 17 | 16½ | 9 | 19 | 21½ | 83 | 4, 10, 16 |

*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth, method of seeding and absence of lodging.

†Yield and quality of grain—Considering proportion of well-filled heads of plump grain of good quality and uniformity of maturity.

‡See key page.

*a*Points deducted for non-standard variety.

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### FALL WHEAT.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| KENT. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| HOWARD AGR. SOCIETY. | | | | | | | | |
| *Judge—R. H. Harding, Thorndale.* | | | | | | | | |
| Arthur Calton, Northwood, R.R. 3 | Niger | 18 | 22 | 10 | 19½ | 23 | 90½a | |
| J. R. Serson, Ridgetown, R.R. 1 | do | 17¾ | 22 | 9 | 19 | 23 | 88¾a | |
| W. Leatherdale, Northwood, R.R. 3 | do | 15 | 22 | 9 | 18½ | 21½ | 84a | |
| W. Leatherdale, do R.R. 3 | do | 15 | 22 | 8 | 18 | 21½ | 82½a | |
| Jno. McLarty, Ridgetown, R.R. 2 | Dawson's G. Chaff | 17½ | 22 | 7 | 13 | 21½ | 81 | |
| G. McDonald, do | do | 17 | 18 | 7½ | 15 | 22½ | 80 | |
| Fred Brien, do R.R. 1 | do | 17 | 20 | 5 | 16 | 21½ | 79½ | |
| Hy. George, do R.R. 1 | do | 15¾ | 18 | 7½ | 15 | 22 | 77¾ | |
| W. Simpson, do R.R. 1 | do | 16 | 15 | 9 | 15 | 22½ | 77½ | 3, 9, 16 |
| Jas. Miller, do R.R. 3 | | 16 | 16 | 8 | 17 | 22 | 77a | |
| D. R. McDiarmid, do R.R. 1 | Dawson's G. Chaff | 15 | 15 | 8 | 15 | 22½ | 75½ | |
| Jno. McMillan, do R.R. 1 | do | 13½ | 15 | 8 | 16 | 20½ | 73 | 3, 9, 16 |
| Fred McGregor, do R.R. 2 | Red Wave | 14½ | 18 | 5 | 15 | 21½ | 72a | |
| Clarence West, Northwood, R.R. 3 | | 12½ | 15 | 7 | 18 | 21 | 71¾a | 9, 14, 16 |
| J. H. Simpson, Ridgetown, R.R. 3 | | 11 | 20 | 8 | 15 | 18½ | 70½a | |
| ORFORD AGR. SOCIETY. | | | | | | | | |
| *Judge—R. H. Harding, Thorndale.* | | | | | | | | |
| J. F. Stone, Highgate | O. A. C. 104 | 18 | 24 | 9 | 19 | 22½ | 90½ | a |
| Wm. Blue, Muirkirk, R.R. 1 | Niger | 18 | 24 | 8½ | 18½ | 22½ | 89½a | |
| J. W. Reycraft, do R.R. 2 | Dawson's G. Chaff | 17½ | 20 | 9 | 18½ | 24 | 89 | |
| R. A. Newman, do R.R. 2 | O. A. C. 104 | 16 | 22 | 8 | 19 | 23½ | 86½a | 9 |
| C. Burchiel, do R.R. 1 | Dawson's G. Chaff | 16½ | 20 | 8½ | 18 | 23 | 86 | |
| J. R. Attridge, Highgate, R.R. 1 | do | 16½ | 22 | 7 | 17½ | 22 | 85 | |
| W. L. Tape, do R.R. 1 | do | 16½ | 20 | 7 | 18 | 22 | 83½ | |
| R. J. Newman, Muirkirk, R.R. 2 | do | 14½ | 18 | 8 | 17 | 22½ | 80 | |
| Jno. Wade, Highgate, R.R. 1 | Niger | 14½ | 18 | 7½ | 19 | 22½ | 79½a | |
| W. Gladstone, do R.R. 2 | | 16 | 18 | 9 | 16 | 21½ | 78½a | |
| Wm. Carnegie, Muirkirk, R.R. 1 | Snow Flake | 16 | 17 | 8 | 16 | 22 | 77a | |
| L. E. Smith, do R.R. 1 | | 15 | 17 | 8 | 18 | 20½ | 76½a | |
| A. G. McDonald, do R.R. 1 | | 15½ | 18 | 7 | 16 | 21½ | 76a | |
| R. Schweitzer, Highgate, R.R. 1 | | 15 | 20 | 7 | 15 | 20½ | 75½a | |
| J. E. Gladstone, do R.R. 2 | | 14½ | 17 | 8 | 15 | 21½ | 74a | |
| Thos. Clark, do R.R. 2 | | 15 | 18 | 7 | 15 | 20 | 73a | |
| Jno. Stewart, do R.R. 2 | | 14 | 16 | 7 | 17½ | 19 | 71½a | |
| LAMBTON. | | | | | | | | |
| FLORENCE AGR. SOCIETY. | | | | | | | | |
| *Judge—Robt. Berry, St. Mary's, R.R. 1.* | | | | | | | | |
| W. J. Ackert, Florence | Dawson's G. Chaff | 19½ | 19 | 9½ | 12½ | 24 | 84½ | 14, 16 |
| Wm. Johnston, Croton | do | 19½ | 19 | 9½ | 12 | 23½ | 83½ | 14, 16 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### FALL WHEAT.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| LAMBTON.—*Continued.* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| FLORENCE AGR. SOCIETY.—*Con.* | | | | | | | | |
| R. D. Bodkin, Croton | Niagara Red | 14½ | 24½ | 9 | 19½ | 16 | 81½*a* | 14 |
| Wm. Perault, Inwood | O. A. C. 104 | 18 | 14 | 9 | 18½ | 22½ | 80*a* | 14, 16 |
| Jas. Strevel, Dresden | Dawson's G. Chaff | 18½ | 20 | 8½ | 9 | 23 | 79 | 14, 16 |
| Geo. Crouch, Florence | O. A. C. 104 | 13½ | 20 | 6 | 18½ | 21½ | 77½*a* | 3, 14, 16 |
| B. W. Fansher, do | Dawson's G. Chaff | 15½ | 15 | 8½ | 17 | 20 | 76 | 3, 14, 16 |
| Jason Eberly, Bothwell | do | 14 | 18 | 9 | 15 | 18 | 74 | 3, 14, 16 |
| J. B. Coneybeare, Croton | O. A. C. 104 | 18 | 16 | 9½ | 15½ | 18 | 73*a* | 3, 14, 16 |
| G. Butler, do | Dawson's G. Chaff | 14½ | 18½ | 8 | 14 | 18 | 73 | 14, 16 |
| J. H. Powell, Inwood | O. A. C. 104 | 13½ | 20½ | 7 | 14 | 19½ | 72½*a* | 3, 14, 16 |
| W. McFadden, Florence | Dawson's G. Chaff | 15 | 17 | 9 | 12 | 19 | 72 | 3, 14, 16 |
| Ray Wood, Croton | Snow Flake | 15 | 17½ | 8½ | 14 | 17½ | 70½*a* | 14, 16 |
| Wm. Gould, do | Dawson's G. Chaff | 12 | 20 | 7½ | 16 | 14½ | 70 | 14, 16 |
| LINCOLN. | | | | | | | | |
| MONCK AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. Pullin, Woodstock.* | | | | | | | | |
| Wm. Piper, Bismarck | Dawson's G. Chaff | 16 | 21 | 8 | 18 | 22 | 85 | 15 |
| D. H. Cohoe, Wellandport, R.R. 1 | do | 16 | 20 | 8 | 19 | 20 | 83 | |
| A. Cohoe, do R.R. 1 | do | 15 | 20 | 8 | 19 | 20 | 82 | 8 |
| J. E. Cohoe, do R.R. 1 | do | 14 | 22 | 8 | 17 | 20 | 81 | |
| S. Heaslip, do R.R. 3 | Abundance | 15 | 20 | 7 | 17 | 21 | 78*a* | 14, 15 |
| O. McPherson, St. Ann's | do | 14 | 19 | 6 | 19 | 19 | 75*a* | |
| R. Ulman, Wellandport, R.R. 3 | do | 15 | 22 | 5 | 17 | 17 | 74*a* | 14, 15 |
| MIDDLESEX. | | | | | | | | |
| LONDON TP. AGR. SOCIETY. | | | | | | | | |
| *Judge—Wm. Hickson, Bobcaygeon.* | | | | | | | | |
| P. L. Graham, Ilderton | Dawson's G. Chaff | 19 | 23 | 8 | 19 | 23½ | 92½ | 14 |
| Donaldson Bros., Ettrick | do | 19 | 21 | 9 | 18 | 25 | 92 | 5, 16 |
| L. G. McClary, London, R.R. 2 | do | 19 | 20 | 8 | 18 | 25 | 90 | 9, 15, 16 |
| Miriam Grieve, Ilderton, R.R. 2 | do | 19 | 19 | 8 | 18 | 24 | 88 | 15, 16 |
| Alex Blair, do R.R. 2 | do | 18 | 17 | 9 | 19 | 24 | 87 | 3, 14, 16 |
| Alex. Taylor, do | do | 17½ | 18 | 8 | 18½ | 24 | 86 | 3, 16 |
| Albert Ironside, Ettrick | do | 16½ | 20 | 8 | 17 | 24¼ | 85¾ | 3, 9 |
| J. McEwen, Denfield | do | 19 | 15 | 9 | 18 | 24½ | 85½ | 1, 3, 16 |
| Jary Bros., Ilderton | do | 16½ | 21 | 7½ | 19½ | 21 | 85⅓ | 16 |
| A. McInroy, do | do | 16 | 17 | 9 | 19 | 20½ | 81½ | 3, 14, 15 |
| Jno. Armitt, Hyde Park | do | 15½ | 19 | 8 | 16 | 21 | 79½ | 14, 16 |
| Martin Rosser, Denfield | New Grand Prize | 17 | 15 | 8 | 18 | 22 | 78*a* | 3,14,15,16 |
| A. Fraser, Ilderton | Dawson's G. Chaff | 17 | 12 | 7½ | 18 | 22 | 76½ | 3, 15, 16 |
| C. W. Hobbs, Denfield | do | 16½ | 5 | 9 | 17 | 23 | 70½ | 1, 2, 3, 16 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### FALL WHEAT.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| MIDDLESEX.—*Continued.* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| McGILLIVRAY AGR. SOCIETY. *Judge—Robt. Berry, St. Mary's, R.R. 1.* | | | | | | | | |
| Frank Coughlin, Centralia | O. A. C. 104 | 15½ | 21½ | 9½ | 17 | 22 | 83½*a* | 14 |
| J. L. Amos, Ailsa Craig | Dawson's G. Chaff | 15½ | 19 | 9½ | 16 | 21½ | 81½ | 3, 14, 16 |
| F. J. Neil, do | do | 16½ | 21 | 9½ | 11½ | 21½ | 80 | 14, 16 |
| Jno. Dixon, do | do | 16 | 20 | 9 | 10 | 21½ | 76½ | 14, 16 |
| W. S. Patterson, do | do | 16½ | 16 | 9½ | 12 | 21 | 75 | 3,10, 14,16 |
| W. L. Corbett, do | do | 16 | 17 | 9 | 12½ | 19½ | 74 | 14, 16 |
| W. J. Robinson, do | do | 13 | 13 | 9½ | 15 | 22½ | 73 | 3, 14, 16 |
| J. & S. Gibson, do | do | 14 | 14 | 9½ | 15⅓ | 17 | 70 | 16 |
| MELBOURNE AGR. SOCIETY. *Judge—Wm. Hickson, Bobcaygeon.* | | | | | | | | |
| Lorne Eaton, Appin | Dawson's G. Chaff | 17½ | 19 | 8 | 18 | 22 | 84½ | 3, 16 |
| W. P. Corniel, do R.R. 2 | do | 17 | 19 | 7½ | 18 | 21½ | 83 | 9, 14 |
| G. Hyndman, Melbourne | do | 16½ | 18 | 7½ | 18 | 21½ | 81½ | 9, 14 |
| Jos. Scott, do | do | 16 | 18 | 7 | 19 | 21 | 81 | 3, 14, 16 |
| H. A. Fletcher, do | do | 16 | 17½ | 7½ | 18 | 21 | 80 | 9, 14 |
| H. Campbell, do R.R. 2 | do | 15 | 19 | 7¼ | 19 | 19½ | 79¾ | 14, 15, 16 |
| Hy. McCracken, do | do | 15 | 18 | 7½ | 19 | 20 | 79½ | 4,14,15, 16 |
| M. C. Gugan, do | do | 15½ | 18 | 6 | 19 | 20 | 78½ | 5, 14 |
| C. B. McLean, do | do | 16 | 18 | 6 | 18 | 20 | 78 | 14, 15, 16 |
| Frank Howe, do | Ruby | 14½ | 18 | 7 | 18 | 20 | 75½*a* | 9, 15 |
| R. C. Alexander, do | Dawson's G. Chaff | 16½ | 10 | 7½ | 19 | 20 | 73 | 14, 16 |
| MOSA AND EKFRID AGR. SOCIETY. *Judge—Jas. Boyd, Markham.* | | | | | | | | |
| Mrs. W. R. Quick, Glencoe | Dawson's G. Chaff | 16½ | 22 | 9 | 19 | 22½ | 89 | 14, 15, 16 |
| G. McMurchy, do | do | 17½ | 20 | 9½ | 18 | 22 | 87 | 3,14, 15,16 |
| D. F. Eadie, do | do | 15 | 22½ | 9 | 18 | 22 | 86½ | 14, 15, 16 |
| J. C. Allan, Appin | do | 14½ | 21½ | 9 | 19 | 22 | 86 | 3, 15, 16 |
| Edgar Munson, Glencoe | do | 14 | 22½ | 8 | 18 | 22½ | 85 | 14 |
| F. I. Abbott, do R.R. 2 | do | 15½ | 21 | 8 | 17 | 23 | 84½ | 14, 15, 16 |
| D. R. McRae, do | do | 15½ | 21 | 9 | 17 | 21½ | 84 | 14, 15, 16 |
| Neil Carruthers, do | do | 14½ | 20 | 9 | 18 | 22 | 83½ | 3,14, 15,16 |
| D. C. Graham, Jr., do | Russian Red | 15½ | 22 | 8 | 18½ | 21½ | 83½*a* | 14, 15, 16 |
| Thos. McDonald, do | Dawson's G. Chaff | 14 | 21 | 8 | 18 | 22 | 83 | 14, 15, 16 |
| Dan. McKellar, do | do | 12½ | 21 | 8 | 17 | 22½ | 81 | 16 |
| Jas. Walker, Walker's | do | 14½ | 20 | 8 | 17 | 21 | 80½ | 3,14, 15,16 |
| D. N. Munroe, Glencoe | Carman Red | 13½ | 20 | 9½ | 17 | 22½ | 80½*a* | 14, 15, 16 |
| Dougal Munroe, do | Dawson's G. Chaff | 13 | 20 | 7 | 18½ | 21½ | 80 | 3, 15, 16 |
| I. Waterworth, do | do | 13 | 20 | 7 | 19 | 20½ | 79½ | 14, 15, 16 |
| W. A. McCutcheon, do | O. A. C. 104 | 13½ | 20 | 8 | 19½ | 20½ | 79½*a* | 14, 15, 16 |
| Neil Lease, do | Dawson's G. Chaff | 14½ | 21 | 7 | 15 | 21½ | 79 | 15, 16 |
| Jas. Corbett, do | do | 12½ | 19 | 8 | 18 | 21 | 78½ | 14, 15, 16 |
| D. A. McCullam, do | do | 14 | 18 | 9 | 16 | 21 | 78 | 3, 15, 16 |
| F. Copeland, do | do | 12½ | 18½ | 8 | 17 | 20½ | 76½ | 14, 15 |
| W. Hailstone, do | do | 12 | 18 | 7 | 18 | 20½ | 75½ | 9,14, 15,16 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### FALL WHEAT.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| MIDDLESEX.—*Continued* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| NORTH MIDDLESEX AGR. SOCIETY. | | | | | | | | |
| *Judge—Robt. Berry, St. Mary's, R.R. 1.* | | | | | | | | |
| A. E. Rosser, Ailsa Craig ..... | Dawson's G. Chaff | 15 | 21 | 9½ | 13 | 21½ | 80 | 14, 16 |
| Harmon Morton, do ..... | do | 15 | 15½ | 9 | 17½ | 20½ | 77½ | 3, 14, 15 |
| Leitch Bros., do ..... | do | 14 | 18 | 9½ | 15½ | 19 | 76 | 14, 16 |
| A. D. McLean, Parkhill, R.R. 6... | do | 16½ | 14 | 9½ | 13½ | 21½ | 75 | 14, 16 |
| E. S. Hughes, Ailsa Craig ..... | Gold Coin..... | 14 | 18 | 9½ | 16 | 19 | 74½*a* | 3, 14, 16 |
| J. H. Amos, do R.R. 3. | Dawson's G. Chaff | 14½ | 15½ | 9½ | 12 | 22½ | 74 | 3, 14, 16 |
| E. McAlpine, do R.R. 3. | do | 13 | 15 | 8½ | 17 | 20 | 73½ | 3, 14, 16 |
| McEwen Bros., do R.R. 1. | do | 13 | 18 | 9 | 15½ | 17½ | 73 | 14, 16 |
| R. McAlpine, do R.R. 3. | do | 16½ | 8 | 9 | 17 | 22 | 72½ | 3, 14, 16 |
| Edgar Darling, do ..... | do | 16 | 9 | 9 | 16½ | 21 | 71½ | 1, 14, 16 |
| OXFORD. | | | | | | | | |
| INGERSOLL, N. & W. OXFORD AGR. SOCIETY. | | | | | | | | |
| *Judge—E. I. McLoughry, Markdale.* | | | | | | | | |
| W. J. Stephenson, Ingersoll, R.R. 3 | Dawson's G. Chaff | 17½ | 16 | 9 | 18 | 21½ | 82 | 3 |
| Geo. Wilson, do R.R. 4 | do | 18 | 12 | 9½ | 19½ | 21½ | 80½ | 3, 14 |
| Jas. Raymond, do ..... | do | 19 | 15 | 9 | 14 | 23 | 80 | 3, 14, 15 |
| Robt. Harris, do R.R. 5 | do | 19½ | 15 | 9½ | 12 | 23½ | 79½ | 10, 14, 15, 16 |
| R. J. Mitchell, Mt. Elgin..... | do | 18½ | 15 | 9 | 13 | 23 | 78½ | 3, 16 |
| A. D. Robinson, Ingersoll, R.R. 4 | Red Clawson..... | 18 | 12 | 9 | 18 | 22½ | 77½*a* | 5,10,14, 16 |
| D. W. Osmond, do R.R. 5 | Red Wave..... | 18 | 12 | 9 | 18 | 22 | 77*a* | 3, 10, 14 |
| Thos. Way, Salford, R.R. 1..... | Dawson's G. Chaff | 15½ | 17½ | 9 | 14 | 20½ | 76½ | 5, 15, 16 |
| Wm. Colyer, Ingersoll, R.R. 3.... | do | 18 | 10 | 7 | 18 | 21½ | 74½ | 3,10,15, 16 |
| Geo. Way, do R.R. 5.... | do | 18 | 12 | 9½ | 12 | 22 | 73½ | 3,10,15, 16 |
| M. F. Oliver, do R.R. 2.... | do | 16½ | 10 | 8 | 16 | 22 | 72½ | 3, 10, 16 |
| Winslow Quinn, do R.R. 1.... | Red Wave..... | 16 | 12 | 9 | 18 | 19 | 72*a* | 3,14,15, 16 |
| PERTH. | | | | | | | | |
| KIRKTON AGR. SOCIETY. | | | | | | | | |
| *Judge—E. J. Mullins, Woodslee.* | | | | | | | | |
| Jos. White, St. Mary's ..... | Dawson's G. Chaff | 20 | 24 | 9 | 17 | 24 | 94 | |
| C. Atkinson, do ..... | do | 19½ | 23 | 9 | 18 | 24 | 93½ | |
| Milton Hooper, do ..... | do | 18 | 24 | 9 | 17 | 23⅓ | 91½ | 16 |
| Jas. More, do R.R. 1... | do | 18½ | 24 | 10 | 17 | 21½ | 91 | |
| Jno. Berry, do R.R. 1 | do | 18 | 21 | 9 | 17 | 21 | 86 | |
| Wm. Harding, do R.R. 1 | do | 18½ | 21 | 7 | 17 | 22 | 85½ | 15, 16 |
| M. Brethour, do R.R. 6... | do | 18½ | 21 | 8 | 15 | 22⅓ | 85 | 15, 16 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### FALL WHEAT.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| PERTH.—*Continued.* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| KIRKTON AGR. SOCIETY—*Con.* | | | | | | | | |
| Wm. Ratcliffe, St. Mary's, R.R. 1. | Dawson's G. Chaff | 18½ | 22 | 7 | 17 | 20 | 84½ | |
| Sam. Pym, Centralia | do | 16½ | 22 | 8 | 16 | 21½ | 84 | |
| Geo. Kemp, Kirkton, | do | 16 | 22 | 7 | 17 | 21 | 83 | |
| R. Ratcliffe, St. Mary's, R.R. 1. | do | 17 | 21 | 7 | 16 | 21½ | 82½ | |
| R. Atkinson, do | do | 17 | 20 | 8 | 18 | 19 | 82 | |
| W. Urquhart, do | do | 17 | 18 | 8 | 19 | 19½ | 81½ | |
| M. Gregory, Kirkton | do | 16 | 21 | 8 | 14 | 22 | 81 | |
| D. Roger, St. Mary's, R.R. 1 | do | 17 | 20 | 8 | 15 | 19½ | 79½ | |
| Wm. Switzer, do | do | 17 | 20 | 8 | 15 | 19½ | 79½ | 14, 15, 16 |
| Jas. Brown, do | do | 17 | 20 | 8 | 15 | 18 | 78½ | |
| Jno. Kennedy, do | do | 16 | 20 | 8 | 15 | 19½ | 78½ | 14, 15, 16 |
| Wesley Shier, Woodham | O. A. C. 104 | 17 | 21 | 7 | 14 | 19½ | 76½*a* | |
| Jno. Malloy, St. Mary's, R.R. 1 | | 15 | 20 | 8 | 14 | 14 | 71 | 14, 15 |
| PETERBOROUGH. | | | | | | | | |
| OTONABEE AGR. SOCIETY. | | | | | | | | |
| *Judge—Geo. McKague, Woodville.* | | | | | | | | |
| R. A. Nelson, Keene | Dawson's G. Chaff | 18 | 24 | 9 | 19 | 22 | 92 | |
| W. A. Nelson, do R.R. 1 | do | 17½ | 23 | 9½ | 19 | 21 | 90 | 10 |
| Jno. V. Manley, Peterborough, R.R. 8 | do | 17½ | 22 | 9 | 19 | 22 | 89½ | 10 |
| Jno. Dinsdale, Keene, R.R. 1 | do | 18 | 21 | 9 | 19 | 22 | 89 | 3, 9, 10 |
| S. McIntyre, do R.R. 2 | do | 16 | 23 | 9 | 19 | 21½ | 88½ | 15, 16 |
| D. Neish, do | do | 16 | 23 | 9 | 19 | 21 | 88 | 11, 13, 16 |
| M. O'Keefe, do R.R. 1 | do | 17 | 20 | 9½ | 18½ | 21½ | 87 | 14 |
| E. C. Foley, do | do | 17½ | 20 | 9 | 18 | 22 | 86½ | 4, 10 |
| Harold Weir, Lang | Red Clawson | 17 | 23 | 9 | 17 | 22 | 86*a* | 15 |
| A. Doric, Peterborough, R.R. 8 | Dawson's G. Chaff | 18 | 19 | 9 | 17½ | 22½ | 86 | 10, 16 |
| W. A. Drummond, do | do | 17½ | 19 | 9 | 18 | 22 | 85½ | 10, 14, 16 |
| Hy. Stewart, Keene, R.R. 2 | Red Clawson | 18 | 23 | 9 | 15½ | 22 | 85½*a* | 14 |
| S. Comrie, Peterborough, R.R. 8 | Dawson's G. Chaff | 18½ | 16 | 8½ | 19 | 22½ | 84½ | 11, 16 |
| R. E. Drummond, do | | 16 | 21 | 8 | 18 | 22 | 83*a* | 14, 16 |
| Wm. Stewart, Keene, R.R. 2 | Dawson's G. Chaff | 17 | 16 | 9 | 19 | 21½ | 82½ | 4 |
| R. Humphries, Lang | Red Clawson | 16½ | 20 | 9½ | 17 | 21 | 82 | 10, 11 |
| C. McIntyre, Peterborough, R.R. 8 | Dawson's G. Chaff | 18 | 15 | 9½ | 15 | 22½ | 80 | 1, 11, 16 |
| SIMCOE. | | | | | | | | |
| COLDWATER AGR. SOCIETY. | | | | | | | | |
| *Judge—A. Forster, Markham.* | | | | | | | | |
| Fisher Ganton, Coldwater | Dawson's G. Chaff | 16½ | 24½ | 9 | 19 | 23½ | 92½ | |
| W. D. Gleadall, do | do | 17½ | 23½ | 8½ | 18½ | 23½ | 91½ | 3 |
| C. A. Goss, do R.R. 3 | do | 16 | 24 | 9 | 19½ | 21 | 89½ | 3, 15 |
| D. Lovering, Lawson | do | 15 | 22½ | 9 | 17 | 24 | 87½ | 2, 3, 15, 16 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### FALL WHEAT

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| SIMCOE.—*Continued.* | | [20] | [25] | [10] | [20] | [25] | [100] | |
| COLDWATER AGR. SOCIETY.—*Con.* | | | | | | | | |
| A. A. Hawke, Coldwater, R.R. 3.. | Dawson's G. Chaff | 14½ | 24 | 9 | 19 | 20½ | 87 | 3, 10, 11 |
| D. Brimage, do R.R. 3.. | do | 16 | 21 | 9 | 19 | 21½ | 86½ | 11 |
| A. Lovering, do ..... | do | 13½ | 20 | 8½ | 16½ | 22½ | 81 | 3, 16 |
| Oswald Swan, Victoria Harbor.... | do | 13 | 22 | 9½ | 15 | 20½ | 80 | 3, 15 |
| H. Walker, Coldwater, R.R. 3..... | do | 16 | 6 | 8½ | 17½ | 22½ | 70½ | 1, 2, 4, 10, 11,14,16 |
| VICTORIA. | | | | | | | | |
| VERULAM AGR. SOCIETY. | | | | | | | | |
| *Judge—R. McCowan, Scarboro.* | | | | | | | | |
| G. Kennedy, Bobcaygeon..... | Sleep & I'll Pay the Rent..... | 15 | 23 | 10 | 19 | 22½ | 87½*a* | |
| R. Watts, do ..... | do | 17 | 22 | 9 | 19 | 22 | 87*a* | 14 |
| Alex. Mitchell, do ..... | do | 17 | 22 | 9 | 20 | 20 | 86*a* | |
| W. McGregor, do ..... | do | 16 | 21 | 10 | 20 | 20 | 85*a* | |
| R. E. Thurston, do ..... | do | 18 | 20 | 10 | 17 | 21 | 84*a* | |
| R. I. Robertson, Dunsford..... | do | 14 | 20 | 10 | 20 | 20 | 82*a* | |
| H. Seymour, Bobcaygeon ..... | do | 18 | 15 | 9 | 20 | 2 | 81*a* | |
| J. J. Kelly, do ..... | do | 16 | 18 | 10 | 19 | 19½ | 80½*a* | 4, 10 |
| T. Cosh, do ..... | do | 14 | 23 | 9 | 19 | 17 | 80*a* | |
| G. W. Dick, do ..... | do | 14 | 22 | 9 | 19 | 16 | 78*a* | |
| C. D. Logan, do ..... | do | 14 | 20 | 9 | 20 | 16 | 77*a* | |
| Arch. Campbell, do ..... | do | 17 | 10 | 6 | 20 | 22 | 73*a* | |
| WATERLOO. | | | | | | | | |
| S. WATERLOO AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. Pullin, Woodstock.* | | | | | | | | |
| A. S. Clemens, Hespeler, R.R. 1... | Dawson's G. Chaff | 17 | 23 | 8 | 20 | 23 | 91 | 10 |
| R. & D. Arthur, Branchton ..... | do | 14 | 24 | 6 | 19 | 20 | 83 | |
| E. Z. Kemkes, do R.R. 1 | Michigan Amber.. | 15 | 24 | 6 | 17 | 20 | 82 | |
| R. E. Cowan, Galt, R.R. 3..... | Dawson's G. Chaff | 14½ | 23 | 7 | 17 | 19½ | 81 | 9 |
| W. Elliott & Son, do R.R. 7..... | do | 13 | 20 | 8 | 19 | 20 | 80 | |
| G. R. Barrie & Son, do R.R. 7.... | do | 14 | 22 | 5 | 17 | 17 | 75 | 14 |
| Thos. Hall, Ayr, R.R. 3..... | do | 10 | 22 | 6 | 16 | 20 | 74 | 9 |
| L. Hagey, Preston, R.R. 2..... | Michigan Amber.. | 13 | 20 | 6 | 16 | 18 | 73 | |
| Ford Sudden, Galt, R.R. 4..... | Dawson's G. Chaff | 13 | 20 | 5 | 17 | 18 | 73 | |
| W. Gillespie, do R.R. 5..... | do | 11 | 23 | 6 | 17 | 15 | 72 | |
| W. C. Shaw, Hespeler, R.R. 2..... | do | 12 | 17 | 5 | 18 | 19 | 71 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### FALL WHEAT.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| WELLINGTON. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| PUSLINCH AGR. SOCIETY. | | | | | | | | |
| *Judge—E. I. McLoughry, Markdale.* | | | | | | | | |
| P. J. McLean & Sons, Puslinch, R.R. 1 | Dawson's G. Chaff | 17 | 22 | 8 | 18 | 20 | 85 | 15, 16 |
| D. McLean, Puslinch, R.R. 1 | Imperial Amber | 16½ | 20 | 8 | 18 | 20 | 82½ | 15 |
| W. Winer, Guelph, R.R. 3 | Dawson's G. Chaff | 16 | 20 | 8 | 18 | 19½ | 81½ | 9, 13 |
| Hugh Ross, Hespeler, R.R. 2 | do | 15½ | 20 | 8 | 16 | 17½ | 77 | 3, 9 |
| A. McLean & Sons, Puslinch, R.R. 1 | Imperial Amber | 17 | 10 | 8½ | 19½ | 21½ | 76½ | 2, 10,14,15 |
| J. Clark & Sons, do | do | 18 | 9½ | 8 | 17½ | 20½ | 73½ | 1, 10 |
| YORK. | | | | | | | | |
| WOODBRIDGE AGR. SOCIETY. | | | | | | | | |
| *Judge—D. McClure, Toronto.* | | | | | | | | |
| D. M. Middleton, Thornhill | Dawson's G. Chaff | 17 | 23 | 8½ | 15 | 24 | 87½ | 10, 14 |
| S. Watson, Woodbridge, | O. A. C. 104 | 16 | 23 | 7 | 18 | 22 | 86*a* | 1 |
| W. Witherspoon, do | Dawson's G. Chaff | 14 | 23 | 8 | 18 | 20 | 83 | 2, 15, 16 |
| Isaac Fletcher, do | Amer. Banner | 16½ | 22 | 7 | 17 | 22 | 82½*a* | 16 |
| D. MacKinnon, do | Winter King | 17 | 18 | 8 | 18 | 23 | 82*a* | 1,10,12, 16 |
| C. A. McNeil, Maple | | 15½ | 21 | 8 | 18 | 21 | 81½*a* | 2,10,15, 16 |
| G. Mathewson, do | Winter King | 15½ | 19 | 8 | 17 | 22 | 79½*a* | 9,10,16 |
| A. Farr, Woodbridge | Dawson's G. Chaff | 15½ | 17 | 8 | 17 | 21 | 78½ | 1, 9, 10, 14, 16 |
| Alex. Cameron, do | Amer. Banner | 17 | 15 | 8 | 18 | 22 | 78*a* | 1, 2, 16 |
| J. Woods, do | Dawson's G. Chaff | 13½ | 15 | 8 | 17 | 19½ | 73 | 1, 9, 16 |
| J. A. McNeil, do | | 13 | 20 | 6 | 17 | 18 | 72*a* | 1, 2, 15 |
| S. McClure, do | | 14½ | 14 | 8 | 16 | 19½ | 70*a* | 1, 9, 10, 15 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### SPRING WHEAT.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| CARLETON. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| FITZROY AGR. SOCIETY. | | | | | | | | |
| *Judge—S. G. Gourlay, Ottawa.* | | | | | | | | |
| J. E. Armstrong, Kinburn | Marquis | 19 | 23 | 9 | 18½ | 22½ | 92 | |
| J. B. Serson, do | do | 18 | 21 | 8 | 17½ | 22 | 86½ | |
| Roy Gourlay, do | do | 17½ | 20 | 9 | 16½ | 21 | 84 | |
| M. Muldoon, Galetta | do | 15½ | 21 | 8 | 17 | 20½ | 82 | 4 |
| F. R. Gourlay, Kinburn | do | 16 | 20 | 7½ | 18 | 20 | 81½ | |
| H. E. Miller, Arnprior | do | 17 | 17 | 8 | 17 | 20 | 79 | |
| Lawson Stewart, do | do | 15½ | 20 | 8 | 18 | 17 | 78½ | 4 |
| E. O. Wilson, Kinburn | do | 14½ | 18 | 9 | 16 | 20½ | 78 | |
| R. H. Smith, Galetta | do | 15½ | 20 | 7 | 19 | 16 | 77½ | |
| F. Herrick, do | do | 14 | 20 | 7 | 19 | 13½ | 73½ | |
| MANITOULIN. | | | | | | | | |
| GORE BAY AGR. SOCIETY. | | | | | | | | |
| *Judge—Robt. Berry, St. Mary's, R.R. 1.* | | | | | | | | |
| J. W. Kinney, Gore Bay | Marquis | 15 | 23 | 7½ | 16 | 17½ | 79 | |
| A. McDougal, do | do | 12½ | 20 | 7½ | 17 | 20 | 77 | 10, 14 |
| Geo. Bagerow, do | do | 13 | 24 | 8 | 16 | 14 | 75 | 15 |
| Chas. Burt, do | do | 11½ | 22 | 7 | 16½ | 16 | 73 | 3 |
| Wm. Hall, do | do | 9½ | 21 | 6½ | 18 | 15½ | 70½ | 3 |
| PRESCOTT. | | | | | | | | |
| ALFRED AGR. SOCIETY. | | | | | | | | |
| *Judge—J. D. McLennan, Lancaster.* | | | | | | | | |
| Xavier Chenier, Plantagenet | Huron | 18½ | 24½ | 9 | 19 | 23¼ | 92¼*a* | |
| A. Daoust, Alfred | White Fife | 17 | 24 | 9 | 19 | 23 | 92 | 3 |
| J. Robillard, do | Red Fife | 17 | 22 | 9 | 19 | 23 | 90 | |
| A. Langevin, do | Marquis | 17 | 20 | 10 | 15 | 23 | 85 | |
| M. Leroux, Plantagenet | Huron | 16 | 24 | 8 | 19 | 19¼ | 84¼*a* | |
| A. Parisien, Alfred | White Fife | 16 | 20 | 9 | 17 | 22 | 84 | |
| Eugene St. Denis, Plantagenet | Marquis | 16 | 20½ | 7 | 17 | 22 | 82½ | |
| A. Charbonneau, Alfred | do | 16 | 22 | 8 | 15 | 21 | 82 | |
| D. Charbonneau, do | do | 14 | 20 | 10 | 15 | 22 | 81 | |
| F. Prevost, Plantagenet | do | 14½ | 20 | 8 | 17 | 21 | 80½ | |
| Jos. Parisien, Alfred | | 14 | 20 | 9 | 17½ | 19 | 79½ | |
| Julien Brisbois, do | Red Fife | 17 | 20 | 9 | 14 | 19 | 79 | |
| S. Chartrand, do | do | 13 | 22 | 9 | 15 | 19 | 78 | |
| Oscar Rouleau, do | do | 12 | 22 | 8 | 10 | 19 | 71 | 2 |
| Ovide Sauve, do | do | 14 | 18 | 6 | 15 | 17 | 70 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### SPRING WHEAT.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| RENFREW. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| ARNPRIOR AGR. SOCIETY. | | | | | | | | |
| *Judge—J. N. Sorley, Ottawa.* | | | | | | | | |
| Chas. Wallace, Arnprior, R.R. 3.. | Marquis ..... | 19 | 23 | 8½ | 19 | 23 | 92½ | 4, 12 |
| F. Abraham, do ..... | do ..... | 17 | 23 | 8½ | 19 | 21½ | 89 | 10 |
| Wm. Young, do ..... | do ..... | 17 | 21 | 8 | 19½ | 19½ | 85 | 4 |
| D. J. Campbell, do ..... | do ..... | 17½ | 22½ | 8 | 15 | 21 | 84 | 4, 15 |
| M. McLaren, Braeside, R.R. ..... | do ..... | 17 | 22 | 8 | 17 | 19½ | 83⅓ | 4, 15 |
| A. Cavers, Arnprior..... | do ..... | 15 | 20 | 8 | 18 | 19½ | 80⅓ | 4, 12 |
| D. G. Campbell, do ..... | do ..... | 15 | 17 | 8½ | 18 | 20½ | 79 | 1, 4 |
| August Scheel, do ..... | do ..... | 16 | 20 | 7 | 17½ | 18 | 78½ | 4, 10 |
| Jas. Havey, do ..... | White Fife..... | 17 | 15 | 9 | 18 | 19 | 78 | 1 |
| J. Rafter, do ..... | do ..... | 16⅔ | 20 | 8 | 12 | 20 | 76⅔ | 1 |
| A. N. Storie, do ..... | Marquis ..... | 12½ | 18 | 7 | 17 | 18 | 72½ | 1, 4 |
| Jas. Findlay, do ..... | do ..... | 11 | 21 | 7 | 17 | 16 | 72 | 4 |
| TEMISKAMING. | | | | | | | | |
| NEW LISKEARD AGR. SOCIETY. | | | | | | | | |
| *Judge—R. L. Moorhouse, Copper Cliff.* | | | | | | | | |
| Fred Bush, New Liskeard ..... | Marquis ..... | 19 | 20 | 8 | 18 | 25 | 90 | |
| Edson Jibb, do ..... | do ..... | 20 | 20 | 8 | 18 | 22 | 88 | |
| Geo. Walsh, do ..... | do ..... | 16 | 20 | 8 | 20 | 22 | 86 | |
| J. R. Philp, do ..... | do ..... | 17⅓ | 20 | 8 | 18 | 22 | 85⅓ | 15 |
| Geo. Bray, do ..... | do ..... | 16 | 23 | 7 | 18 | 21 | 85 | |
| J. M. Gray, do ..... | do ..... | 15 | 22 | 7 | 20 | 20 | 84 | |
| Milton Irvine, Hanbury..... | do ..... | 17 | 16 | 8 | 15 | 22½ | 78½ | 1 |
| C. Thomas, New Liskeard..... | do ..... | 14 | 20 | 6 | 18 | 20 | 78 | |
| Herb. Jibb, do ..... | do ..... | 16 | 20 | 5 | 15 | 20 | 76 | |
| Asa Jewell, do ..... | do ..... | 11 | 20 | 6 | 16 | 21 | 74 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### BARLEY.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| DUNDAS. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| MOUNTAIN AGR. SOCIETY. | | | | | | | | |
| *Judge—S. G. Gourlay, Ottawa.* | | | | | | | | |
| J. W. Flegg, S. Mountain | O. A. C. 21 | 17 | 22 | 9 | 17 | 22 | 87 | |
| W. Cleland, do | do | 18 | 19 | 8½ | 17½ | 22½ | 85½ | 2 |
| S. D. Thorpe, do | do | 16 | 19 | 8 | 16 | 21 | 80 | 5 |
| E. Montgomery, do | do | 17 | 18 | 8½ | 16 | 20 | 79½ | |
| Jno. Baldwin, Winchester, R.R. 3 | do | 17½ | 16 | 9 | 16 | 20½ | 79 | 2 |
| Froats Bros., S. Mountain, R.R. 1 | Mandscheuri | 16 | 17 | 7½ | 18 | 19½ | 78 | 2, 5 |
| Leroy Berry, do | O. A. C. 21 | 16 | 17 | 7 | 16 | 19 | 75 | 2, 5 |
| W. G. Timmins, Inkerman | do | 16 | 12 | 9 | 17 | 20 | 74 | 2, 4, 5 |
| R. K. Graham, S. Mountain | do | 15½ | 13 | 8 | 15 | 20½ | 72 | 2, 5 |
| R. Mulholland, do | do | 17 | 13 | 9 | 13 | 19 | 71 | 2, 5 |
| HALTON. | | | | | | | | |
| HALTON AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. McLean, Richmond Hill.* | | | | | | | | |
| Wm. Shields, Milton | | 20 | 22 | 9½ | 18 | 24½ | 94 | 15 |
| E. Patterson, do | O. A. C. 21 | 19 | 21 | 9 | 15½ | 24 | 88½ | 14, 15 |
| F. C. Wilmott, do | do | 17½ | 23 | 10 | 14 | 21 | 85½ | |
| Ernest Simpson, do | do | 17½ | 19 | 9 | 16½ | 21 | 83 | 2 |
| Geo. Agnew, do | do | 17 | 20 | 9½ | 15 | 20½ | 82 | 15 |
| A. D. McDuffie, do | do | 15½ | 22 | 10 | 14 | 20¼ | 81¾ | 2, 15 |
| Geo. Bick, Hornby, R.R. 1 | do | 17 | 21 | 7½ | 15½ | 20½ | 81½ | 15 |
| C. Wilson, Georgetown | do | 16½ | 18½ | 9½ | 15 | 21 | 80½ | 4, 15 |
| F. Ruddell, do | do | 18 | 15 | 10 | 14 | 22½ | 79½ | 2, 15 |
| Milton Bird, do | do | 17½ | 17 | 9 | 13 | 22½ | 79 | 2 |
| E. Harrop, Milton | do | 18½ | 8 | 10 | 16 | 23½ | 76 | 2, 15 |
| Homer Dixon, do | do | 16½ | 15 | 9 | 13 | 21 | 74½ | 2, 15 |
| Jas. Wilson, do | do | 14½ | 16 | 9 | 14 | 19½ | 73 | 1, 2, 15 |
| PEEL. | | | | | | | | |
| ALBION AND BOLTON AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. McLean, Richmond Hill.* | | | | | | | | |
| Geo. Downey, Bolton, R.R. 2 | O. A. C. 21 | 18 | 22 | 8 | 19 | 22 | 89 | 10 |
| A. S. Rutherford & Sons, Bolton | do | 19½ | 19½ | 8 | 18½ | 23 | 88½ | 1 |
| Russell See, Bolton | do | 18½ | 18 | 10 | 18 | 23 | 87½ | |
| Geo. Robinson, do | do | 17½ | 16½ | 9 | 18 | 21½ | 82½ | 2 |
| F. J. Wakely, do | do | 18 | 14 | 10 | 17 | 23 | 82 | 1, 2 |
| O. H. Downey, do | do | 16 | 18 | 9 | 17 | 21 | 81 | |
| Bert Bishop do | do | 17 | 14 | 8½ | 18½ | 21½ | 79½ | |
| E. Armstrong, do R.R. 1 | do | 16 | 15 | 9 | 15½ | 20½ | 76 | 1 |
| W. Downey, do R.R. 1 | do | 17½ | 13 | 9 | 14 | 22 | 75½ | 2 |
| Stanley Wilson, do R.R. 5 | do | 16½ | 10 | 9 | 18 | 21 | 74½ | 1, 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### BARLEY.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from smut, blight and insects. | Freedom from other varieties and other kinds of grain. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| SIMCOE. | | [20] | [25] | [10] | [20] | [25] | [100] | |
| NOTTAWASAGA AND GT. NORTHERN AGR. SOCIETY. | | | | | | | | |
| *Judge—G. E. Foster, Honeywood.* | | | | | | | | |
| Alex. Morrison, Creemore, R.R. 2. | O. A. C. 21..... | 18 | 23 | 10 | 16 | 23 | 90 | 2 |
| Fred Bryce, Batteau, R.R. 1..... | do ..... | 18 | 18 | 9 | 18 | 23 | 86 | 1 |
| R. A. Giffin, Creemore, R.R. 2.. | do ..... | 18 | 18 | 9 | 14 | 22 | 81 | 2 |
| D'Arcy McLaughlin, do .. | do ..... | 16 | 10 | 7 | 15 | 22 | 70 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### PEAS.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from weeds. | Freedom from disease and insects as mildew, blight, weevil, worms, etc. | Purity of variety. | †Yield and quality of grain. | Totals of scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|---|
| BRUCE. | | [20] | [15] | [20] | [15] | [30] | [100] | |
| EASTNOR AGR. SOCIETY. | | | | | | | | |
| *Judge—Jas. H. McKee, Shelburne, R.R. 4.* | | | | | | | | |
| Jno. Dawson, Lion's Head, R.R.2 | Golden Vine | 18½ | 14 | 18 | 14 | 27 | 91½ | |
| Byron Bray, do R.R. 1 | do | 18½ | 13½ | 17½ | 14 | 27 | 90½ | |
| Jno. Dickie, do R.R. 1 | do | 18 | 14½ | 18 | 14 | 24½ | 89 | |
| W. J. Walpole, do R.R. 2 | do | 18½ | 13½ | 17 | 13½ | 26 | 88½ | 15 |
| F. B. Hatt, do R.R. 1 | do | 18½ | 12½ | 17½ | 14 | 25½ | 88 | |
| Wallace Jenks, do R.R. 1 | do | 17½ | 10 | 18 | 14 | 28 | 87½ | 1, 2 |
| O. W. Tackaberry, do R.R. 1 | do | 18 | 10 | 18 | 14½ | 26½ | 87 | 1, 2 |
| A. Mielhoussen, do R.R. 1 | do | 18½ | 10 | 17½ | 14½ | 25½ | 86 | |
| A. Slocum, do R.R. 1 | do | 17 | 10½ | 18 | 13 | 27 | 85½ | 5, 15 |
| Thos. Parsons, do R.R. 2 | do | 17 | 10½ | 17 | 14 | 26½ | 85 | 2 |
| A. P. Bray, do ..... | do | 17 | 13 | 17 | 14 | 23½ | 84½ | |
| C. D. Shaw, do R.R. 1 | do | 17 | 11 | 18 | 11 | 27 | 84 | 15 |
| F. Cameron, do ..... | do | 17½ | 13 | 17 | 12 | 24 | 83½ | |
| S. L. Rutherford, do R.R. 1 | do | 18½ | 5 | 18 | 14 | 27 | 82½ | |
| Jas. Prescott, do R.R. 1 | do | 16½ | 10 | 18 | 14½ | 22½ | 81½ | 2 |
| R. E. Cameron, do ..... | do | 15½ | 10 | 17½ | 14 | 23½ | 80½ | |
| W. J. Bray, do R.R. 1 | do | 17 | 3 | 19 | 13½ | 27 | 79½ | 1 |
| J. A. Bray, do R.R. 1 | do | 16 | 10 | 17½ | 3 | 24½ | 71 | 15 |
| TEMISKAMING. | | | | | | | | |
| NEW LISKEARD AGR. SOCIETY. | | | | | | | | |
| *Judge—R. L. Moorhouse, Copper Cliff.* | | | | | | | | |
| J. M. Gray, New Liskeard | Arthur | 20 | 14 | 19 | 15 | 30 | 98 | 15 |
| Milton Irvine, Hanbury | do | 20 | 13 | 18 | 15 | 27 | 93 | 15 |
| Edson Jibb, New Liskeard | do | 18 | 12 | 18 | 15 | 28 | 91 | |
| Norman Jibb, do ..... | do | 17 | 14 | 18 | 12 | 26 | 87 | |
| Geo. Bray, do ..... | do | 15 | 12 | 18 | 15 | 23 | 83 | 15 |
| J. A. Philip, do ..... | do | 15 | 12 | 18½ | 12 | 24 | 81½ | 15 |
| Geo. Walsh, do ..... | do | 15 | 12 | 17 | 15 | 22 | 81 | 15 |
| Herb. Jibb, do ..... | do | 14 | 11 | 18 | 15 | 22 | 80 | 15 |
| Chas. Thomas, do ..... | do | 17 | 15 | 15 | 15 | 17 | 79 | |
| Jas. Scott, do ..... | Zippon | 15 | 10 | 17 | 12 | 22 | 74*a* | |

*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth and method of seeding.

†Yield and quality of grain—Considering number and size of pods per plant, uniformity of maturity and proportion of grain to straw.

‡See key page.

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| BRUCE. | | [20] | [5] | [20] | [15] | [40] | [100] |
| LUCKNOW AGR. SOCIETY. | | | | | | | |
| *Judge—H. L. Tisdale, Brampton.* | | | | | | | |
| Jno. Webster, Lucknow, R.R. 2 | Leaming | 17 | 5 | 17 | 15 | 35 | 87*a* |
| W. Rutherford, do | do | 17 | 5 | 15 | 15 | 35 | 85*a* |
| W. E. Henderson, do | W.C., Y. Dent and Bailey | 17 | 5 | 16 | 12 | 33 | 83 |
| Jno. McLeod, do R.R. 5 | do | 16 | 5 | 18 | 12 | 31 | 82 |
| F. G. Todd, do R.R. 2 | Bailey | 16½ | 5 | 15 | 15 | 30 | 81½ |
| H. Rutherford, do R.R. 2 | W.C., Y. Dent | 16 | 5 | 15 | 13 | 31 | 80 |
| W. Webster, do R.R. 2 | Leaming | 16½ | 5 | 16 | 10 | 31 | 76½*a* |
| Jos. Colling, Ripley, R.R. 1 | Wisconsin No. 7 | 14 | 5 | 15 | 12 | 29 | 75 |
| Roy Alton, Lucknow, R.R. 7 | G. Glow and W.C., Y. Dent | 15½ | 5 | 10 | 12 | 31 | 73½ |
| CARLETON. | | | | | | | |
| CARP AGR. SOCIETY. | | | | | | | |
| *Judge—Robt. McKay, Maxville.* | | | | | | | |
| E. H. Graham & Son, Carp | Wisconsin No. 7 | 18 | 4½ | 19½ | 14 | 33 | 89 |
| Geo. Rivington & Son, do | Golden Glow | 17½ | 4½ | 18 | 14 | 33 | 87 |
| W. G. Rivington, do | do | 17 | 4½ | 17 | 14 | 33½ | 86 |
| Jas. H. Wilson, do | do | 16 | 4½ | 16 | 14½ | 33 | 84 |
| G. H. Caldwell, do | do | 17 | 4½ | 15 | 12 | 33 | 81½ |
| D. Scharfe & Son, Stittsville | Wisconsin No. 7 | 16½ | 3½ | 18 | 11 | 28 | 77 |
| G. A. Hodgins & Son, Carp | do | 15½ | 4½ | 16 | 9 | 31½ | 76½ |
| F. S. Caldwell, do | Golden Glow | 17½ | 4½ | 15 | 12 | 26½ | 75½ |
| W. J. Johnston, do | do | 15½ | 4¼ | 14 | 13 | 28 | 75 |
| F. H. Caldwell, do | do | 15½ | 4½ | 11 | 13 | 29 | 73 |
| DURHAM. | | | | | | | |
| CLARKE AGR. SOCIETY. | | | | | | | |
| *Judge—A. Forster, Markham.* | | | | | | | |
| W. F. Rickard, Newcastle | Wisconsin No. 7 | 18½ | 4½ | 19 | 14¾ | 38 | 94¾ |
| C. A. Chapman, Orono | do | 17½ | 4¾ | 18½ | 14½ | 37¾ | 93 |
| D. J. Gibson, Bowmanville, R.R. 4 | W.C., Y. Dent | 17½ | 4¾ | 19 | 14¾ | 35¼ | 91¼ |

*General appearance—Considering uniformity and stand of crop, type of plant, and vigor of growth, and method of planting.

†Yield of fodder and grain—Considering quality and quantity of fodder, type as regards size, shape and yield of ears, size and depth of kernels, variety considered.

*a*Points deducted for non-standard variety.

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| DURHAM.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| CLARKE AGR. SOCIETY.—*Con.* | | | | | | | |
| C. Sisson, Orono | Wisconsin No. 7 | 16 | 4½ | 18¾ | 14½ | 34 | 87¾ |
| Jno. Biglow, do | do | 16½ | 4¾ | 18½ | 14½ | 33¼ | 87½ |
| C. L. Powers, do | do | 17 | 4½ | 18 | 14 | 33½ | 87 |
| I. T. Chapman, do | Golden Glow | 16¼ | 4½ | 18 | 14½ | 32¼ | 85¾ |
| Gordon Powers do | Wisconsin No. 7 | 16 | 4½ | 18 | 14 | 32½ | 85 |
| H. P. Weir, do | Bailey | 15 | 4½ | 18 | 14½ | 32½ | 84½ |
| E. E. Patterson, do | Wisconsin No. 7 and G. Glow | 15 | 4 | 18 | 14 | 32 | 83 |
| ELGIN. | | | | | | | |
| ALDBORO AGR. SOCIETY. | | | | | | | |
| *Judge—W. M. Abraham, Chatham.* | | | | | | | |
| J. J. Johnston, Wardsville | W.C., Y. Dent | 18½ | 4½ | 19 | 14½ | 37 | 93½ |
| S. King, do | do | 17½ | 4½ | 19 | 14½ | 37 | 92½ |
| W. W. Havens, Rodney | Wisconsin No. 7 | 17½ | 4½ | 19 | 14 | 37 | 92 |
| R. A. Kerr, do | do | 18 | 4½ | 17 | 14 | 37 | 90½ |
| D. F. McLean, do | do | 16½ | 4½ | 19 | 14 | 36 | 90 |
| Hy. Hesersauer, do | Bailey | 17 | 4 | 18 | 14 | 36 | 89 |
| J. A. King & Son, Wardsville | W.C., Y. Dent | 16½ | 4 | 19 | 14 | 35 | 88½ |
| W. W. Campbell & Son, do | do | 16½ | 4 | 18½ | 14 | 35 | 88 |
| D. A. Purcell & Son, do | do | 16 | 4 | 19 | 14 | 33½ | 87½ |
| Jas. A. Kelly, Rodney | do | 16 | 4 | 18½ | 14 | 33½ | 86 |
| J. C. Downie, do | Longfellow | 16½ | 4 | 19 | 14 | 32 | 85½ |
| Wm. Downie, do | Salzer's N. Dakota | 16 | 4 | 19 | 14 | 32 | 85 |
| Roy Blain, Wardsville | W.C., Y. Dent | 15½ | 4 | 17½ | 13½ | 32 | 82½ |
| E. E. Huffman, Rodney | do | 15½ | 4 | 17 | 13½ | 32 | 82 |
| E. J. Purcell, Wardsville | do | 15½ | 4 | 17 | 13 | 32 | 84½ |
| H. H. Johnston, do | do | 15 | 4 | 16 | 14 | 32 | 81 |
| A. E. Johnston, do | do | 15 | 4 | 16 | 14 | 31 | 80 |
| A. Wellan, Rodney | White Cap | 15 | 4 | 16 | 14 | 30 | 79 |
| W. Kelly, do | Eight Rowed Yellow | 15 | 3½ | 16 | 14 | 31 | 77½*a* |
| Whitney Kelly, do | do | 15 | 3½ | 15 | 14 | 30 | 75½*a* |
| Archie McColl, do | Wisconsin No. 7 and Silver King | 15 | 4 | 15 | 14 | 28½ | 75½*a* |
| W. ELGIN AGR. SOCIETY. | | | | | | | |
| *Judge—W. M. Abraham, Chatham.* | | | | | | | |
| A. McKillop, Dunwich, R.R. 1 | W.C., Y. Dent | 17½ | 4 | 19 | 14 | 37 | 91½ |
| J. W. Bobier, do R.R. 2 | Bailey | 17 | 4 | 19 | 14 | 37 | 91 |
| S. L. Pearce, Wallacetown | Longfellow | 17 | 4 | 18 | 14 | 36 | 89 |
| M. N. McNeil, Dutton | Bailey | 17 | 4 | 17 | 14 | 36 | 88 |
| E. V. Docker, Dunwich, R.R. 2 | do | 17 | 4 | 17½ | 13½ | 35 | 87 |
| E. S. Backus, Wallacetown, R.R. 1 | Longfellow | 17 | 4 | 18 | 12½ | 35 | 86½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| ELGIN.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| W. Elgin Agr. Society.—*Con.* | | | | | | | |
| Ezra Bedford, Dunwich, R.R. 1 | Longfellow | 17 | 4 | 17 | 14 | 34 | 86 |
| T. McGuire, Wallacetown | W. Cap | 16½ | 4 | 18 | 13 | 34 | 85½ |
| C. Blue, do R.R. 3 | W.C., Y. Dent | 17 | 4 | 18 | 14 | 32 | 85 |
| J. A. Page, do R.R. 1 | Bailey | 16½ | 4 | 18 | 14 | 32 | 84½ |
| Hy. Garbutt, Wallaceburg, R.R. 1 | do | 17 | 4 | 17 | 14 | 32 | 84 |
| F. E. Smith, Dunwich, R.R. 2 | W.C., Y. Dent | 16 | 4 | 18½ | 12 | 33 | 83½ |
| S. M. Pearce, Fingal | do | 17 | 4 | 18 | 13 | 31 | 83 |
| H. E. Pearce, Wallacetown, R.R. 1 | Longfellow | 17 | 4 | 18 | 12 | 31 | 82 |
| J. E. Pearce, Dunwich, R.R. 1 | do | 17 | 4 | 18 | 12 | 30½ | 81½ |
| W. A. Galbraith, Iona Sta., R.R. 3 | Golden Glow | 17 | 4 | 18 | 12 | 30 | 81 |
| Mungo McNabb, Iona Sta | Bailey | 15½ | 4 | 18 | 12 | 31 | 80½ |
| ESSEX. | | | | | | | |
| Comber Agr. Society. | | | | | | | |
| *Judge—R. H. Harding, Thorndale.* | | | | | | | |
| W. H. White, Staples, R.R. 2 | Early Leaming | 20 | 3½ | 20 | 15 | 35 | 91½*a* |
| A. G. Hiser, Comber, R.R. 2 | Bailey | 20 | 3½ | 17 | 15 | 35½ | 91 |
| E. Pearson, do R.R. 2 | Gold Medal | 20 | 3½ | 19 | 15 | 35 | 90½*a* |
| R. B. Keith, do R.R. 1 | do | 20 | 2 | 20 | 15 | 35 | 90*a* |
| A. Caza, Tilbury, R.R. 4 | Bailey | 19 | 2 | 20 | 15 | 33½ | 89½ |
| T. White, Staples, R.R. 2 | Early Leaming | 18½ | 3 | 20 | 15 | 34½ | 89*a* |
| O. D. Gaynier, Tilbury, R.R. 4 | Wisconsin No. 7 | 19 | 2 | 18½ | 15 | 34 | 88½ |
| F. W. Taylor, Comber | Bailey | 19 | 3 | 18 | 15 | 33 | 88 |
| R. Tanskey, Staples, R.R. 2 | Gold Medal | 16½ | 4¼ | 20 | 15 | 34 | 87¾*a* |
| M. Brown, Comber, R.R. 1 | Golden Glow | 20 | 3½ | 20 | 15 | 29 | 87½ |
| C. F. Allyn, do | Bailey | 18½ | 3 | 17 | 14 | 34½ | 87 |
| Morris Bros., Tilbury, R.R. 4 | do | 19½ | 3 | 16 | 15 | 33 | 86½ |
| Archie Stratford, do | Gold Medal | 20 | 3½ | 18 | 15 | 31½ | 86*a* |
| W. D. Elliott, Comber, R.R. 1 | Bailey | 16 | 4 | 17 | 15 | 33 | 85 |
| Wm. Elliott, Staples, R.R. 2 | do | 18½ | 3 | 17 | 15 | 31 | 84½ |
| J. H. Dietrich, W. Comber, R.R. 1 | Wisconsin No. 7 | 18½ | 3½ | 15 | 13 | 34 | 84 |
| J. L. Ainslie, Comber | Leaming | 14½ | 3 | 18 | 15 | 33 | 81½*a* |
| FRONTENAC. | | | | | | | |
| Kingston Ind. Agr. Society. | | | | | | | |
| *Judge—M. J. Casselman, Morrisburg.* | | | | | | | |
| Jas. Baxter, Kingston, R.R. 1 | | 18½ | 4½ | 18 | 15 | 35 | 89*a* |
| Earl Sheppard, do | | 18½ | 5 | 18 | 15 | 31 | 85½*a* |
| J. Brown, Kingston, R.R. 2 | Leaming | 19½ | 4½ | 19 | 15 | 28 | 84*a* |

Note.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| FRONTENAC.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| KINGSTON IND. AGR. SOC.—*Con.* | | | | | | | |
| J. D. Morris, Portsmouth, R.R. 1 | | 17½ | 5 | 15 | 15 | 33 | 83½*a* |
| W. J. Barry, Kingston Mills | | 17 | 5 | 16 | 15 | 31 | 82*a* |
| T. Doyle, do R.R. 1 | | 18 | 4½ | 16 | 15 | 30 | 81½*a* |
| A. E. Franklin, do R.R. | | 16½ | 4½ | 16 | 15 | 31 | 81*a* |
| C. Walker, Portsmouth, R.R. | | 14 | 5 | 16 | 15 | 30 | 78*a* |
| J. Henderson, do | | 18 | 4½ | 19 | 15 | 21 | 75½*a* |
| J. A. Bradden, Kingston Mills, R.R. | | 14 | 4½ | 18 | 15 | 25 | 74½*a* |
| A. C. Day, Portsmouth, R.R. | | 18 | 5 | 17 | 15 | 21 | 74*a* |
| J. Shortell, Kingston, R.R. 1 | | 18½ | 5 | 18 | 15 | 18 | 72½*a* |
| D. C. Rogers, do | | 15 | 4½ | 16 | 15 | 23 | 71½*a* |
| W. J. Hunter, do | | 18½ | 4½ | 18 | 15 | 16 | 70*a* |
| GREY. | | | | | | | |
| HOLLAND AGR. SOCIETY. | | | | | | | |
| *Judge—Alex. McKague, Teeswater.* | | | | | | | |
| W.G.Milson, Chatsworth, R.R. 3 | W. Cap | 18 | 4½ | 19 | 14 | 35 | 90½ |
| E. P. Hamill, do R.R. 4 | do | 17½ | 4½ | 19½ | 14 | 34½ | 90 |
| W. Sutherland, do R.R. 4 | do | 17½ | 4½ | 19½ | 14 | 34 | 89½ |
| W. J. Carson, do R.R. 3 | do | 17 | 4½ | 16 | 14 | 34 | 85½ |
| T. A. McDonald, do R.R. 3 | do | 17 | 5 | 14 | 14 | 34 | 84 |
| Wm. Lundy, do R.R. 3 | Wisconsin No. 7 | 16½ | 4½ | 18½ | 13 | 31 | 83½ |
| Chas. Finn, do R.R. 2 | W. Cap | 16 | 4½ | 18 | 12 | 30 | 80½ |
| T. McComb, do R.R. 1 | do | 16 | 4½ | 14 | 13 | 32 | 79½ |
| Robt. Merriam, do R.R. 3 | do | 15½ | 5 | 17 | 12 | 27 | 76½ |
| KILSYTH AGR. SOCIETY. | | | | | | | |
| *Judge—F. A. Maas, Streetsville, R.R. 1.* | | | | | | | |
| Chas. Cook, Tara, R.R. 5 | Bailey | 20 | 5 | 20 | 12 | 40 | 97 |
| O. R. Smith, Owen Sound, R.R. 4 | do | 20 | 5 | 15 | 15 | 40 | 95 |
| Jas. Beckett, do R.R. 4 | W. Cap | 20 | 5 | 19 | 14 | 34 | 92 |
| J. A. Forgrave, do R.R. 5 | Ensilage | 18 | 4 | 20 | 14 | 35¼ | 89¼*a* |
| G. P. Kennedy, Tara, R.R. 5 | Bailey | 17 | 5 | 20 | 15 | 32 | 89 |
| Alex. S. Donald, do | Golden Glow | 16 | 5 | 17 | 15 | 32 | 85 |
| B. O. Porteous, Owen Sd., R.R. 3 | Bailey | 17 | 5 | 17 | 15 | 30 | 84 |
| J. M. Lynn, do | Wisconsin No. 7 | 17 | 4 | 18 | 15 | 29 | 83 |
| W. Sherman, Tara, R.R. 5 | Bailey | 17 | 4 | 15 | 15 | 28 | 79 |
| H. Breen, do | do | 14 | 5 | 17 | 15 | 28 | 79 |
| H. Schwandt, do | Huron Dent | 18 | 5 | 20 | 10 | 27 | 78*a* |
| J. R. S. Mundle, Jr., Owen Sd., R.R. 3 | Dent | 15 | 5 | 15 | 13 | 30 | 78 |
| I. McInnes, do R.R. 4 | Wisconsin No. 7 | 15 | 5 | 10 | 15 | 28 | 73 |
| Neil McArthur, do R.R. 3 | Bailey | 15 | 5 | 10 | 15 | 27 | 72 |
| H. Sargeant, do R.R. 4 | Ensilage | 14 | 5 | 15 | 10 | 27 | 69*a* |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| GREY.—*Continued* | | [20] | [5] | [20] | [15] | [40] | [100] |
| WALTERS FALLS AGR. SOC. | | | | | | | |
| *Judge—F. A. Maas, Streetsville, R.R. 1.* | | | | | | | |
| G. F. Reid, Goring | Wisconsin No. 7 | 20 | 4 | 19 | 15 | 37 | 95 |
| R. A. Hanna, Walters Falls | do | 20 | 5 | 18 | 15 | 36 | 94 |
| E. W. Quinton, do | do | 19 | 5 | 19 | 15 | 34 | 92 |
| Jno. Thorne, do | do | 19 | 5 | 18 | 15 | 34 | 91 |
| W. T. King, Chatsworth, R.R.5 | Bailey | 19 | 5 | 17 | 15 | 32 | 88 |
| E. Ptolemy, Walters Falls | Dent | 17 | 5 | 18 | 15 | 31 | 84*a* |
| L. Shepherdson, Markdale, R.R. 3 | Golden Glow | 17 | 5 | 15 | 15 | 30 | 82 |
| C. W. Saunders, Walters Falls | Wisconsin No. 7 | 15 | 5 | 15 | 15 | 30 | 80 |
| Jno. Heighes, do | do | 17 | 5 | 10 | 15 | 32 | 79 |
| D. Reid, Chatsworth, R.R. 5 | do | 17 | 5 | 10 | 15 | 28 | 75 |
| HASTINGS. | | | | | | | |
| STIRLING AGR. SOCIETY. | | | | | | | |
| *Judge—E. H. Sills, Napanee.* | | | | | | | |
| Edgar Morrow, Stirling, R.R. 4 | Ensilage, Wis. No. 7. | 18 | 4 | 18 | 15 | • 30½ | 91½ |
| Bush Bros., do R.R. 4 | do | 17 | 5 | 17 | 15 | 34 | 88 |
| C. W. Thompson, do R.R. 1 | do | 16½ | 5 | 18 | 15 | 33 | 87½ |
| Ewart Bailey, do R.R. 4 | Ensilage, G. Glow | 15½ | 4½ | 18 | 15 | 32 | 85 |
| W. H. Heath, do R.R. 1 | do Wis. No. 7 | 16 | 4 | 12 | 14 | 35 | 81 |
| T. J. Thompson, do R.R. 1 | Wisconsin No. 7 | 16 | 4 | 13 | 15 | 32 | 80 |
| C. Van Allen, do R.R. 1 | Ensilage | 14½ | 4 | 15 | 15 | 31 | 77½*a* |
| C. W. Heath, do R.R. 1 | do | 15 | 4 | 12 | 14 | 32 | 75*a* |
| M. Shea, do R.R. 4 | do | 16½ | 4 | 10 | 14 | 31 | 73½*a* |
| V. Mathews, do R.R. 1 | do | 13 | 4½ | 16 | 15 | 26 | 72½*a* |
| G. Wilson, do R.R. 3 | do | 13 | 4 | 14 | 14 | 29 | 72*a* |
| Geo. Cook, do R.R. 2 | do | 15 | 5 | 14 | 10 | 29 | 71*a* |
| HURON. | | | | | | | |
| EAST HURON AGR. SOCIETY. | | | | | | | |
| *Judge—H. L. Tisdale, Brampton.* | | | | | | | |
| E. Hoover, Brussels, R.R. 3 | Y. C. Dent | 18 | 4 | 19 | 15 | 37 | 93 |
| O. Turnbull & Sons, do R.R. 2 | Golden Glow | 16½ | 5 | 15 | 15 | 37 | 88½ |
| F. Oster, do R.R. 2 | Mixed | 18 | 4½ | 16 | 12½ | 37 | 88 |
| Robt. Reid, Walton | Golden Glow and Leaming | 19½ | 4 | 15 | 12 | 37 | 86½*a* |
| D. McKinnon, Brussels, R.R. 3 | W.C., Y. Dent | 15 | 5 | 15 | 15 | 33 | 83 |
| J. McDonald, do R.R. 2 | Wis. No. 7; Bailey | 16½ | 5 | 14 | 12 | 32 | 79½ |
| J. G. Speir, do R.R. 2 | Wisconsin No. 7 | 16 | 4½ | 12 | 12 | 33 | 77½ |
| A. McLauchlin, do R.R. 5 | Wis. No. 7; Leaming | 17 | 4 | 14 | 12 | 30 | 76*a* |
| L. E. Cardiff, Brussels | W. Cap.; Leaming | 15 | 5 | 12 | 12 | 29 | 72*a* |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| KENT. | | [20] | [5] | [20] | [15] | [40] | [100] |
| EAST KENT AGR. SOCIETY. *Judge—J. G. McPharlin, Essex.* | | | | | | | |
| H. Hetherington, Thamesville | Golden Glow | 19½ | 4 | 19½ | 14 | 37 | 94 |
| Jno. Miller, do | W. Cap | 18¾ | 4 | 18½ | 13 | 36 | 90¼ |
| Wilfred Cameron, do | do | 18½ | 4 | 18½ | 13 | 36 | 90 |
| Geo. Clark, do | do | 18½ | 4 | 19 | 13½ | 34½ | 89½ |
| Sam Holmes, do | do | 18½ | 4 | 19 | 13 | 34½ | 89 |
| P. Secord, do | Golden Glow | 18½ | 4 | 17 | 13½ | 35½ | 88½ |
| Jas. Winter, do | W. Cap | 17¾ | 4½ | 19 | 13 | 34 | 88¼ |
| Cecil Ross, do | Y. Dent | 19 | 4 | 17½ | 13 | 34½ | 88 |
| Bert Street, do | W.C., Y. Dent | 17¼ | 4 | 19½ | 13 | 34 | 87¾ |
| J. Buchanan, do | Wisconsin No. 7 | 17 | 4 | 18 | 13½ | 35 | 87½ |
| Jos. Brislay, Northwood | W. Cap | 17¾ | 4½ | 18 | 13 | 34 | 87¼ |
| Robt. Barker, Thamesville | Golden Glow | 17 | 4 | 18½ | 13 | 34¼ | 86¾ |
| F. Cameron, do | W. Cap | 17 | 4½ | 18½ | 13 | 33½ | 86½ |
| W. Clark, do | do | 18 | 4 | 17½ | 13 | 33½ | 86 |
| P. Cameron, do | do | 17 | 4 | 17¼ | 13 | 34½ | 85¾ |
| D. Winters, Northwood | do | 18 | 3½ | 17 | 13 | 34 | 85½ |
| H. H. Buchanan, Thamesville | Wisconsin No. 7 | 17½ | 4 | 17 | 13 | 33½ | 85 |
| D. Buchanan, do | do | 17 | 4 | 17½ | 13 | 33 | 84½ |
| Archie Dick, do | W. Cap | 16¾ | 4 | 18 | 13 | 32½ | 84¼ |
| T. D. Hubbel, do | Wisconsin No. 7 | 17 | 4 | 17 | 13 | 33 | 84 |
| J. C. Harris, do | W. Cap | 17 | 4 | 17 | 13 | 32½ | 83½ |
| W. Snary, do | do | 17 | 4 | 18 | 12 | 32 | 83 |
| HARWICH AGR. SOCIETY. *Judge—E. J. Mullins, Woodslee.* | | | | | | | |
| G. Stenton, Mull | W. Cap | 19 | 4 | 20 | 13½ | 37½ | 94 |
| G. Patterson, Blenheim, R.R. 6 | Bailey | 19 | 4 | 20 | 13 | 37 | 93 |
| Thos. Pegg, do R.R. 3 | W.C. Dent | 18 | 4 | 17 | 14 | 37 | 90 |
| J. D. McPherson, do R.R. 1 | Leaming | 19 | 4 | 17 | 15 | 36 | 89*a* |
| L. Huffman, Harwich, R.R. 3 | Y. Dent | 19 | 4 | 18 | 13 | 34½ | 88½ |
| L. Campbell, Blenheim, R.R. 4 | Bailey | 19 | 4 | 18 | 13 | 34 | 88 |
| D. McMillan, do R.R. 4 | W. Cap | 19 | 4 | 17 | 13 | 34 | 87 |
| Reg. Grist, do | Bailey | 19 | 4 | 16 | 13 | 34 | 86 |
| Stanley Clark, do R.R. 3 | Wisconsin No. 7 | 18 | 4 | 18 | 13 | 32 | 85 |
| Hector McColl, do | Bailey | 19 | 4 | 17 | 12 | 32 | 84 |
| Lewis Claus, Mull | W. Cap | 16 | 4 | 18 | 12 | 32 | 82 |
| Wm. Snow, Blenheim | do | 17 | 4 | 14 | 13 | 33 | 81 |
| Edgar Mallory, do | do | 17 | 4 | 12 | 13 | 32 | 78 |
| Jno. Clayton, do | do | 16 | 4 | 15 | 12 | 30 | 77 |
| J. S. McPherson, do R.R. 2 | Wisconsin No. 7 | 15½ | 4 | 15 | 13 | 26 | 73½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| KENT.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| HOWARD AGR. SOCIETY. | | | | | | | |
| *Judge—W. M. Abraham, Chatham.* | | | | | | | |
| A. Catton, Northwood, R.R. 3 | Wisconsin No. 7 | 18½ | 4½ | 19 | 14 | 37 | 93 |
| Jas. Miller, Ridgetown, R.R. 3 | Golden Glow | 18½ | 4½ | 19 | 14 | 36 | 92 |
| Jno. Miller, Thamesville | W. C., Y. Dent | 17½ | 4½ | 17½ | 14 | 36 | 89½ |
| T. Gosnell, Ridgetown, R.R. 3 | W. Cap | 17½ | 4½ | 18 | 14 | 35 | 89 |
| W. Simpson, do R.R. 1 | Golden Glow | 17 | 4½ | 17½ | 14 | 35 | 88 |
| Fred Brien, do R.R. 1 | W. C., Y. Dent | 16 | 4½ | 18 | 14 | 33 | 85½ |
| P. Gosnell, do R.R. 1 | Golden Glow | 15½ | 4½ | 17½ | 13½ | 34 | 85 |
| F. Gosnell, do R.R. 3 | W. C., Y. Dent | 15½ | 4½ | 18 | 14 | 31 | 83 |
| Wm. Cudmore, do R.R. 3 | do | 14 | 4½ | 19 | 14 | 31 | 82½ |
| J. H. Simpson, do R.R. 3 | Golden Glow | 14 | 4½ | 18½ | 14 | 31 | 82 |
| G. McDonald, do | W. C., Y. Dent | 14 | 4½ | 17 | 13½ | 31 | 80 |
| A. W. Brien, do | 8-rowed Yellow | 14 | 4½ | 18½ | 14 | 30½ | 79½*a* |
| Jno. Mason, do R.R. 1 | Wisconsin No. 7 | 14 | 4½ | 18 | 14 | 28½ | 79 |
| W. Leatherdale, Northwood, R.R. 3 | Golden Glow | 13 | 4½ | 19 | 13¼ | 29 | 78¾ |
| N. Campbell, Ridgetown, R.R. 2 | W. C., Y. Dent | 13 | 4½ | 17 | 13½ | 30 | 78 |
| D. R. McDiarmid, do R.R. 1 | Dent | 13 | 4½ | 17 | 13½ | 31½ | 77½*a* |
| Hy. Wright, Northwood, R.R. 3 | W. C., Y. Dent | 13 | 4½ | 17 | 13 | 29 | 76½ |
| W. Leatherdale do | 8-rowed Yellow | 13 | 4½ | 18 | 13 | 30 | 76½*a* |
| F. McGregor, Ridgetown, R.R. 2 | W. C., Y. Dent | 13 | 4½ | 15 | 13 | 30 | 75½ |
| J. D. Brien, do | 8-rowed Yellow | 13 | 4½ | 17 | 13 | 30 | 75½*a* |
| P. Campbell, do R.R. 3 | do | 11½ | 4½ | 17 | 13 | 30 | 74*a* |
| G. Simpson, do R.R. 1 | W. C., Y. Dent | 13 | 4½ | 18 | 13 | 25 | 73½ |
| Reeder Bros., do R.R. 3 | 8-rowed Flint | 14½ | 4½ | 17 | 14 | 25 | 73*a* |
| W. M. Knight, do R.R. 1 | do | 13½ | 4½ | 18 | 14 | 24½ | 72½*a* |
| RALEIGH AND TILBURY AGR. SOCIETY. | | | | | | | |
| *Judge—Lee Cascadden, Aylmer.* | | | | | | | |
| Jas. Wellwood, Merlin | Wisconsin No. 7 | 19½ | 4 | 20 | 14 | 37 | 94½ |
| F. H. Middleton, Fletcher, R.R. 1 | do | 19 | 4 | 20 | 14 | 36½ | 93½ |
| C. Marshall, Merlin | Leaming | 20 | 4 | 20 | 14 | 37 | 93*a* |
| Jas. Grey, do | W. Cap | 19 | 4 | 20 | 14 | 34 | 91 |
| H. Eltervoog, do | Leaming | 19½ | 4 | 20 | 14 | 35 | 90½*a* |
| Albert Mason, do | W. C. Dent | 19¼ | 4 | 19 | 13 | 35 | 90¼ |
| W. Finlin, do | Wisconsin No. 7 | 20 | 3 | 20 | 14 | 33 | 90 |
| M. Fletcher, Fletcher | do | 18½ | 4½ | 18 | 13 | 34 | 88 |
| M. J. Seale, Merlin | Leaming | 19½ | 4 | 19 | 13 | 34 | 87½*a* |
| C. Cranston, do | Wisconsin No. 7 | 19 | 4 | 20 | 12½ | 32 | 87½ |
| Jno. Jenner, do | W. Cap | 17 | 4 | 20 | 13 | 33 | 87 |
| E. Johnston, do | do | 17 | 4 | 20 | 12½ | 33¼ | 86¾ |
| C. Marriott, do | Early Leaming | 19½ | 4 | 20 | 12 | 33 | 86½*a* |
| H. Johnston, do | W. Cap | 17½ | 4 | 18 | 13 | 33 | 85½ |
| W. R. Gardiner, do | Wisconsin No. 7 | 17¼ | 4 | 18 | 13 | 33 | 85¼ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| KENT.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| RALEIGH AND TILBURY AGR. SOCIETY.—*Continued.* | | | | | | | |
| Jos. McKeown, Merlin | W. Cap | 17 | 4 | 18 | 12 | 34 | 85 |
| Jas. Renwick, do | Leaming | 17½ | 4 | 18 | 15 | 32 | 84½*a* |
| Jas. Stacey, do | do | 17 | 4 | 19 | 13 | 33 | 84*a* |
| S. W. Sales, do | W. C., Y. Dent | 16 | 3 | 18½ | 12 | 32 | 81½ |
| G. J. Wright, do | Leaming | 15 | 4 | 17 | 14 | 31 | 79*a* |
| WALLACEBURG AGR. SOCIETY. *Judge—R. E. Mortimer, Honeywood.* | | | | | | | |
| Jas. Coveny, Electric | Golden Glow | 18 | 4½ | 18 | 13½ | 35 | 89 |
| Dan. Coveny, do | Wisconsin No. 7 | 18 | 4 | 18 | 13½ | 35 | 88½ |
| Harvey Handson, do R.R. 1 | do | 16½ | 4 | 18 | 14 | 35½ | 88 |
| Bert Payne, Pt. Lambton, R.R.3 | W. C., Y. Dent | 18 | 4 | 18 | 13½ | 33 | 86½ |
| Hy. Sheller, do R.R. 2 | Wisconsin No. 7 | 18 | 4 | 16 | 13½ | 33½ | 85 |
| J. M. Langstaffe, Tupperville | W. C., Y. Dent | 17½ | 4 | 15 | 12½ | 34½ | 83½ |
| D. L. McCreary, Wallaceburg, R.R. 2 | do | 16½ | 4 | 15 | 13 | 31½ | 80 |
| G. W. Arnold, do R.R. 3 | do | 17 | 4 | 12 | 13 | 33 | 79 |
| Orrie Crowe, do R.R. 5 | Golden Glow | 15 | 4 | 16 | 13½ | 29½ | 78 |
| Thos. Files, Electric | do | 16½ | 4 | 13½ | 12 | 31½ | 77½ |
| F. Coulter, do | do | 16½ | 3 | 17½ | 8 | 32 | 77 |
| W. Richardson, Wallaceburg, R.R. 2 | | 15½ | 4 | 17 | 13 | 26½ | 74*a* |
| W. C. Gordon, Electric | Wisconsin No. 7 | 15½ | 4 | 12 | 8 | 30½ | 70 |
| LAMBTON. BOSANQUET AGR. SOCIETY. *Judge—B. R. Cohoe, Woodslee.* | | | | | | | |
| Jas. Walden, Thedford | Wisconsin No. 7 | 18 | 4½ | 19 | 14 | 36 | 91½ |
| A. D. Donald, do | W. C., Y. Dent | 18½ | 4½ | 19 | 14 | 34½ | 90½ |
| R. Tidball, do | Wisconsin No. 7 | 18 | 4½ | 19 | 13 | 34½ | 89 |
| Jas. French, Sr., do | Golden Glow | 17 | 4½ | 19 | 14 | 34 | 88½ |
| W. J. French, do | Wisconsin No. 7 | 16½ | 4½ | 18 | 14 | 34 | 87 |
| Jos. Malloy, do | do | 17 | 4½ | 17 | 14 | 34 | 86½ |
| Geo. Hilborn, do | W. C., Y. Dent | 17½ | 4½ | 16 | 14 | 33 | 85 |
| A. S. Carmichael, do | do | 16 | 4½ | 19 | 14 | 31 | 84½ |
| W. G. Thomson, do R.R. 3 | Wisconsin No. 7 | 17½ | 4½ | 16 | 14 | 32 | 84 |
| Roy Elliott, do | Golden Glow | 16 | 4½ | 16 | 14 | 33 | 83½ |
| W. H. Tidball, Forest | Cloud's Early | 16½ | 4½ | 19 | 13 | 32 | 83*a* |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| LAMBTON.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| BROOKE AND ALVINSTON AGR. SOCIETY. | | | | | | | |
| *Judge—B. R. Cohoe, Woodslee.* | | | | | | | |
| T. H. Lovell, Alvinston, R.R. 4 | Wisconsin No. 7 | 18½ | 4½ | 19½ | 15 | 34½ | 92 |
| Jas. Hand, do R.R. 4 | Golden Glow | 18½ | 4½ | 20 | 14 | 34 | 91 |
| F. W. Oke, do R.R. 2 | do | 18 | 4½ | 19½ | 14 | 34 | 90 |
| D. Hayter, do R.R. 4 | do | 18 | 4½ | 19 | 14 | 34 | 89½ |
| R. Lovell, do R.R. 4 | Wisconsin No. 7 | 17 | 4½ | 19½ | 15 | 33 | 89 |
| N. McCallum, do R.R. 4 | W. C. Dent | 17½ | 4½ | 19 | 14 | 33½ | 88½ |
| T. Braithwaite, do R.R. 4 | Golden Glow | 17½ | 4½ | 18 | 14 | 34 | 88 |
| D. A. McIntyre, do R.R. 7 | do | 18 | 4½ | 17 | 14 | 34 | 87½ |
| Jas. McCallum, do R.R. 4 | W. C. Dent | 17 | 4½ | 18 | 14 | 33 | 86½ |
| D. A. McKinlay, do R.R. 4 | do | 17 | 4½ | 17 | 14 | 33 | 85½ |
| W. J. Weed, do R.R. 7 | Golden Glow | 16½ | 4½ | 15 | 14 | 33 | 83 |
| FLORENCE AGR. SOCIETY. | | | | | | | |
| *Judge—Robt. Berry, St. Mary's, R. R. 1.* | | | | | | | |
| W. McFadden, Florence | Wisconsin No. 7 | 19 | 3 | 18 | 15 | 36 | 91 |
| Hy. Paul, do | W. Cap | 17½ | 4½ | 20 | 15 | 33 | 90 |
| R. Currie, do | Wisconsin No. 7 | 17½ | 2½ | 19 | 15 | 35 | 89 |
| Jos. Walker, Bothwell | do | 17 | 4 | 19 | 15 | 32½ | 87½ |
| W. J. Sinclair, Croton, R.R. 2 | do | 17½ | 3½ | 16 | 13 | 34 | 84 |
| J. H. Powell, Inwood | Golden Glow | 15½ | 4 | 18 | 15 | 30½ | 83 |
| W. J. Morningstar, Croton, R.R. 2 | W. Cap | 17 | 4½ | 18 | 15 | 28 | 82½ |
| C. Moorehouse, Florence | Wisconsin No. 7 | 17½ | 3½ | 15 | 15 | 31 | 82 |
| Jas. Buchanan, Thamesville | do | 16 | 3½ | 10 | 15 | 32½ | 77 |
| Jno. Gould, Croton | Imp. Leaming | 13½ | 3 | 16½ | 14½ | 27 | 72½*a* |
| Alex. McGregor, Bothwell | Early Rose | 16½ | 4½ | 11 | 14 | 27 | 71*a* |
| LEEDS. | | | | | | | |
| BROCKVILLE AGR. SOCIETY. | | | | | | | |
| *Judge—J. D. McLennan, Lancaster.* | | | | | | | |
| Lloyd Green, Soperton | Wisconsin No. 7 | 17 | 5 | 18 | 14 | 37 | 91 |
| Wm. Dumster, Lynn | W. Cap | 17 | 3 | 19 | 14 | 34 | 87 |
| F. Slack, Brockville, R.R. 3 | Wisconsin No. 7 | 15 | 4 | 19 | 14 | 34 | 86 |
| G. E. Jackson, Lyn | do | 15 | 3 | 18 | 14 | 34 | 84 |
| J. Hudson & Son, do | | 16 | 4 | 18 | 14 | 33 | 83*a* |
| H. J. Williams, do | Golden Glow | 15 | 4 | 17 | 13 | 32 | 81 |
| J. Gilroy, Tin Cap | Wisconsin No. 7 | 16 | 5 | 17 | 12 | 30 | 80 |
| L. Petten, Lyn | do | 16 | 4 | 17 | 10 | 27½ | 74½ |
| H. Clark, Brockville | | 16 | 4 | 15 | 13 | 28 | 74 |
| J. S. Moore, Bellamy, R.R. 1 | Wisconsin No. 7 | 15 | 5 | 17 | 7 | 30 | 74 |
| J. W. Stewart, Lyn | Eureka | 19 | 4 | 19 | 14 | 19 | 73*a* |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| LINCOLN. | | [20] | [5] | [20] | [15] | [40] | [100] |
| NIAGARA TOWN AND TP. AGR. SOCIETY. | | | | | | | |
| *Judge—Jas. McNeil, Maple.* | | | | | | | |
| R. G. Dawson, Niagara-on-the-Lake, R.R. 2 | S. N. Dakota | 16 | 4 | 19 | 14 | 33 | 86 |
| J. J. Craise, Niagara-on-the-Lake | Imp. Leaming | 17 | 4 | 18 | 13 | 32 | 82*a* |
| J. M. Crysler, St. Catharines, R.R. 4 | do | 16 | 4 | 17 | 12½ | 32 | 79½*a* |
| J. D. Cooper, Niagara-on-the Lake, R.R. 1 | Longfellow | 16 | 4 | 14 | 14 | 31 | 79 |
| W. Sheppard, do R.R. 1 | Leaming | 16 | 4 | 16 | 11 | 33 | 78*a* |
| Jas. Murray, do R.R. 2 | Dakota White | 15 | 4 | 15 | 12 | 31 | 77 |
| R. L. Shaw, do R.R. 2 | 8-rowed Yellow | 14 | 4 | 16 | 14 | 28 | 74*a* |
| Percy Lees, do | Imp. Leaming | 13½ | 4 | 13½ | 14 | 30 | 73*a* |
| MIDDLESEX. | | | | | | | |
| DORCHESTER AGR. SOCIETY. | | | | | | | |
| *Judge—Jas. Pullin, Woodstock.* | | | | | | | |
| And. Irwin, Dorchester Sta. | Golden Glow | 16 | 4 | 18 | 15 | 35 | 88 |
| Sam. Demeray, Mossley, R.R. 2 | do | 16 | 4 | 18 | 14 | 33 | 85 |
| Jas. Johnson, do | do | 14 | 3 | 20 | 15 | 30 | 82 |
| C. Connor, Dorchester, R.R. 2 | do | 15 | 3 | 18 | 15 | 29 | 80 |
| R. G. Boxall, Mossley, R.R. 2 | do | 13 | 3 | 18 | 14 | 31 | 79 |
| Ed Rouse, do R.R. 1 | do | 13 | 2 | 19 | 15 | 29 | 78 |
| F. Atkins, do R.R. 2 | do | 16 | 3 | 17 | 13 | 28 | 77 |
| E. Cornish, do R.R. 1 | do | 12 | 3 | 20 | 15 | 26 | 76 |
| L. Beecham, do R.R. 2 | do | 13 | 3 | 16 | 15 | 28 | 75 |
| C. Beecham, do R.R. 1 | do | 12 | 3 | 17 | 13 | 29 | 74 |
| LONDON TP. AGR. SOCIETY. | | | | | | | |
| *Judge—Jas. Pullin, Woodstock.* | | | | | | | |
| P. L. Graham, Ilderton, R.R. 2 | Bailey | 18 | 3 | 20 | 15 | 33 | 89 |
| W. T. Whillans, do | W. Cap | 14 | 4 | 19 | 15 | 34 | 86 |
| Alex. Blair, do | Bailey | 15 | 4 | 18 | 14 | 33 | 84 |
| G. Grieve, Denfield | Leaming | 15½ | 3 | 20 | 15 | 32 | 83½ |
| W. A. McInroy, Ilderton | Bailey | 16 | 3 | 18 | 15 | 31 | 83 |
| Jno. Arnnitt, Hyde Park | W. Cap | 13 | 2 | 18 | 15 | 32 | 80 |
| E. T. Caverhill, Ilderton | do | 13 | 3 | 19 | 14 | 30 | 79 |
| Ninian Grieve, do | do | 15 | 3 | 18 | 14 | 28 | 78 |
| J. D. McEwen, Denfield | do | 13 | 3 | 17 | 13 | 27 | 73 |
| L. G. McLary, London, R.R. 2. | Bailey | 15 | 3 | 8 | 14 | 31 | 71 |
| Jary Bros., Ilderton | do | 14 | 2 | 15 | 13 | 27 | 71 |

NOTE.—The figures in brackets at the top are maximum possible scores.

# RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

## CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| NORFOLK. | | [20] | [5] | [20] | [15] | [40] | [100] |
| N. WALSINGHAM AGR. SOCIETY. | | | | | | | |
| *Judge—M. W. Sexsmith, Ridgeway.* | | | | | | | |
| E. E. Murphy, Silver Hill, R.R.1 | W. C., Y. Dent | 19½ | 4 | 20 | 14¼ | 39 | 96¾ |
| F. Doan, Wycombe | do | 19½ | 5 | 20 | 14 | 38 | 96½ |
| Wm. Collins, Langton | do | 19 | 3¾ | 20 | 14 | 39 | 95¾ |
| W. Wittet, Courtland, R.R. 1 | do | 18 | 4 | 19 | 14 | 38 | 93 |
| G. B. Robinson, Langton, R.R.1 | do | 18½ | 4 | 20 | 14 | 36 | 92½ |
| F. Darlow, do | do | 20 | 3 | 20 | 14 | 35 | 92 |
| Uriah Hill, do | Longfellow | 18½ | 4 | 19 | 14 | 36 | 91½ |
| Alf. Rogers, Lynedoch | W. C., Y. Dent | 18 | 4 | 20 | 14 | 35 | 91 |
| R. Hunter, do | do | 19 | 4 | 20 | 13 | 34½ | 90½ |
| R. Massecar, Wyecombe | do | 19½ | 3 | 16 | 14 | 37½ | 90 |
| C. G. Cowan, Langton, R.R. 1 | do | 18½ | 4½ | 14 | 14 | 38 | 89 |
| C. J. Swain, do | do | 18 | 4¼ | 15 | 14 | 37½ | 88¾ |
| R. G. McDowell, Port Rowan | Early Smut Nose | 17 | 5 | 16 | 14 | 34 | 84*a* |
| B. Wilson, Lynedoch | Longfellow | 17½ | 3 | 18 | 14 | 31 | 83½ |
| W. Thorne, do | Leaming | 16 | 4 | 17 | 14 | 31 | 80*a* |
| NORTHUMBERLAND. | | | | | | | |
| SEYMOUR AGR. SOCIETY. | | | | | | | |
| *Judge—E. H. Sills, Napanee.* | | | | | | | |
| Lorne Evans, Norham | Wisconsin No. 7 | 17½ | 4½ | 14 | 15 | 36 | 87 |
| D. Durran, Campbellford | do | 18½ | 5 | 16 | 13 | 34 | 86½ |
| W. Ross, Meyersburg | do | 17 | 4 | 18 | 13 | 34 | 86 |
| C.E. Bonnycastle, Campbellford | Golden Glow | 15 | 4 | 17½ | 10 | 33½ | 80 |
| Robt. Innis, do | do | 17½ | 3½ | 15 | 11 | 32 | 79 |
| H. McKelvey, do | Ensilage, Bountiful. | 14½ | 4 | 18 | 13 | 31 | 78½*a* |
| T. Weatherill, do | do Wis. No. 7. | 15 | 4 | 14 | 14 | 31 | 78 |
| Alex. Hume, do | do G. Glow | 16 | 4 | 10 | 15 | 32 | 77 |
| W. Rannie, do | | 17 | 4 | 17 | 13 | 24 | 73*a* |
| W. A. Wynn, do | Golden Glow | 14½ | 4 | 10 | 15 | 29 | 72½ |
| E. McCook, do | Ensilage | 15 | 4 | 14 | 13 | 27 | 71*a* |
| ONTARIO. | | | | | | | |
| BEAVERTON AGR. SOCIETY. | | | | | | | |
| *Judge—J. W. Patton, Rocklyn.* | | | | | | | |
| Jno. Westlake, Beaverton, R.R.3 | Wisconsin No. 7 | 19½ | 5 | 20 | 15 | 37 | 96½ |
| D. Brown, do R.R. 1 | do | 19 | 5 | 18 | 15 | 36 | 93 |
| Robt. Ross, do R.R. 1 | do | 17½ | 5 | 15 | 15 | 35½ | 88 |
| F. W. Rilance, do R.R. 2 | Golden Glow | 18½ | 5 | 15 | 14 | 35 | 87½ |
| W. R. McKay, do R.R. 2 | do | 18 | 5 | 15 | 15 | 34 | 87 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| ONTARIO.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| BEAVERTON AGR. SOC.—*Con.* | | | | | | | |
| Mrs. J. J. King, Cannington, R.R. 2 | Bountiful | 18½ | 5 | 16 | 15 | 32 | 84½*a* |
| Dunrobin Farm, Beaverton, | W. C., Y. Dent | 17 | 5 | 13 | 14 | 32 | 81 |
| E. Callaghan, do | Wisconsin No. 7 | 17½ | 5 | 14 | 12 | 31½ | 80 |
| J. Harrison, do R.R. 2 | Golden Glow | 17 | 5 | 13 | 12 | 32 | 79 |
| D. Gilchrist, Brechin | W.Cap and G. Glow. | 17 | 5 | 13 | 12 | 30 | 77 |
| J. B. Ross, Beaverton | Wisconsin No. 7 | 17½ | 5 | 13 | 13 | 27½ | 76 |
| Calder Bros., do | do | 16½ | 5 | 13 | 13 | 28 | 75½ |
| OXFORD. | | | | | | | |
| E. NISSOURI AGR. SOCIETY. | | | | | | | |
| *Judge—J. G. McPharlin, Essex.* | | | | | | | |
| F. R. Thornton, Thamesford | Golden Glow | 19½ | 4 | 19½ | 14 | 37½ | 94½ |
| F. G. Seaton, Lakeside | Wisconsin No. 7 | 18¾ | 4 | 19 | 14 | 36 | 91¾ |
| G. K. Matheson, Harrington, W. | Golden Glow | 18¾ | 4 | 19 | 14 | 35½ | 91¼ |
| W. I. Hogg, Thamesford | do | 19 | 4 | 19 | 14 | 34½ | 90½ |
| D. Thompson, do R.R. 2 | do | 18¾ | 4 | 17 | 14 | 36 | 89¾ |
| Sam Tye, do R.R. 1 | W. Cap | 18½ | 4 | 18 | 14 | 35 | 89½ |
| H. Rutledge, do | Golden Glow | 18 | 3¾ | 19 | 14 | 33½ | 88¼ |
| A. Webster, Lakeside | do | 17¼ | 4¾ | 18 | 14 | 34 | 88 |
| T. R. McGee, do | do | 18½ | 4 | 17 | 14 | 35 | 87½ |
| D. R. Calder, do | do | 18½ | 4 | 17 | 14 | 34 | 87½ |
| A. Whetstone, do | W. Cap | 18 | 4 | 17 | 14 | 34 | 87 |
| S. G. Skinner, Thamesford, R.R. 1 | Golden Glow | 17¾ | 4 | 17 | 14 | 34 | 86¾ |
| S. NORWICH AGR. SOCIETY. | | | | | | | |
| *Judge—J. G. McPharlin, Essex.* | | | | | | | |
| Jno. M. Ryder, Otterville, R.R. 1 | Wisconsin No. 7 | 19¼ | 4½ | 19 | 14 | 37¼ | 94 |
| Alb. Lawrence, do R.R. 2 | do | 18¾ | 4 | 19 | 14 | 37 | 92¾ |
| C. McDougall, do R.R. 1 | do | 19 | 4¼ | 18½ | 13½ | 36½ | 91½ |
| G. Housel, do R.R. 1 | do | 18½ | 4¼ | 18½ | 13½ | 35½ | 90¼ |
| F. Leach, do R.R. 1 | do | 18½ | 4 | 18½ | 13 | 35½ | 89½ |
| M. H. Haley, Springford, R.R. 1 | do | 18¼ | 4 | 16 | 14 | 36½ | 88¾ |
| Jos. Parker, Otterville | do | 17½ | 4 | 19 | 14 | 34 | 88½ |
| W. Innis, do R.R. 1 | Wisconsin No. 7 | 17¼ | 4¼ | 17 | 14 | 35½ | 88¼ |
| T. Stroud, Springford, R.R. 1 | Strawberry Dent | 19 | 4½ | 17 | 13 | 35¼ | 87¼*a* |
| M. V. Stroud, do | Wisconsin No. 7 | 18 | 4 | 16 | 13 | 36 | 87 |
| Fred Lee, do R.R. 1 | do | 17½ | 4 | 17 | 14 | 34 | 86½ |
| Chas. Bell, do | do | 18½ | 4½ | 16 | 14 | 33 | 86 |
| K. Griffin, Otterville, R.R. 2 | Leaming | 17 | 4½ | 15 | 14 | 35 | 83½*a* |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| OXFORD.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| WOODSTOCK AGR. SOCIETY. | | | | | | | |
| *Judge—F. A. Maas, Streetsville.* | | | | | | | |
| F. W. Goble, Woodstock, R.R. 3 | Golden Glow | 20 | 3 | 18 | 15 | 40 | 96 |
| G. de Montmorency, do R.R. 6 | do | 20 | 4 | 16 | 15 | 45 | 95 |
| Jno. Lockhart, do R.R. 5 | Wisconsin No. 7 | 17 | 5 | 18 | 15 | 33 | 88 |
| J. W. Innes, do R.R. 1 | Golden Glow | 18 | 3 | 15 | 15 | 36 | 87 |
| J. C. Karn, do R.R. 1 | Wisconsin No. 7 | 19 | 4 | 16 | 15 | 32 | 86 |
| B. R. Town, Beachville, R.R. 1 | Golden Glow | 17 | 4 | 17 | 15 | 32 | 85 |
| F. Hodgkins, Woodstock | do | 18 | 4 | 12 | 12 | 34 | 80 |
| PEEL. | | | | | | | |
| TORONTO TP. AGR. SOCIETY. | | | | | | | |
| *Judge—J. W. Patton, Rocklyn.* | | | | | | | |
| H. F. Chesters, Streetsville | Giant Prolific | 18½ | 5 | 19 | 15 | 35 | 90½*a* |
| S. Hall, do | Wisconsin No. 7 | 19¼ | 4½ | 19 | 10 | 36 | 88¾ |
| Geo. Ewles, do | do | 19 | 4½ | 19 | 10 | 35½ | 88 |
| J. B. Ross, do | Leaming | 19¼ | 4½ | 18 | 15 | 30½ | 85¼*a* |
| J. D. Steen, Meadowvale | do | 19 | 4 | 18 | 13 | 33 | 85*a* |
| Ed. Adamson, Streetsville | Big Crop | 18 | 4 | 17 | 15 | 30½ | 82½*a* |
| F. Maas, do | Leaming | 17 | 4 | 17 | 14 | 31½ | 81½*a* |
| F. Roberts, do | W. Cap | 18½ | 4 | 18 | 10 | 30 | 80½ |
| J. K. Featherston, do | Leaming | 16 | 3½ | 14 | 10 | 32 | 73½*a* |
| PERTH. | | | | | | | |
| FULLARTON, LOGAN AND HIBBERT AGR. SOCIETY. | | | | | | | |
| *Judge—Jas. McLean, Richmond Hill.* | | | | | | | |
| H. R. Greenwood & Son, Mitchell, R.R. 1 | Wisconsin No. 7 | 18 | 5 | 20 | 14 | 35½ | 92½ |
| W. Forester, do | Bailey | 19 | 2½ | 19½ | 14 | 34 | 89 |
| Alex. Cole, do R.R. 1 | Golden Glow | 17¾ | 4 | 19 | 14 | 34 | 88¾ |
| M. Worden, Staffa | Bailey | 17 | 4½ | 19 | 13 | 33 | 86½ |
| Wm. Muegge, Mitchell, R.R. 4 | Wisconsin No. 7 | 17½ | 4½ | 19 | 13 | 32 | 86 |
| Thos. Tubb, do R.R. 3 | do | 17 | 4½ | 17½ | 13 | 32 | 84 |
| Jas. Scott, Cromarty | Bailey | 17¼ | 5 | 16½ | 13 | 31½ | 83¼ |
| Russell Scott, do | do | 16½ | 5 | 16 | 13 | 32 | 82½ |
| M. M. Clark, Russelldale | Bailey and White C. | 16 | 4½ | 18½ | 12 | 31 | 82 |
| Geo. Kemp, Mitchell, R.R. 1 | | 16 | 4½ | 18½ | 13 | 31½ | 81½*a* |
| Enos Docking, Dublin, R.R. 2 | Bailey | 16 | 5 | 15 | 13 | 31 | 80 |
| J. M. Miller, Staffa | do | 15½ | 5 | 15 | 13 | 31 | 79½ |
| C. Hunt, Mitchell, R.R. 4 | Bailey and Wisconsin No. 7 | 15½ | 4½ | 14 | 13 | 30 | 77 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| PERTH.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| STRATFORD AGR. SOCIETY. | | | | | | | |
| *Judge—Jas. McLean, Richmond Hill.* | | | | | | | |
| Robt. Thompson, St. Paul's... | Golden Glow..... | 19 | 4½ | 20 | 13 | 37 | 93½ |
| W. W. Ballantyne, Stratford, R.R. 3..... | do ..... | 18½ | 4½ | 20 | 13 | 35 | 91 |
| Adam Bell, St. Paul's, R.R. 2.. | do ..... | 18 | 4½ | 19½ | 13 | 31½ | 87½ |
| Arbogast Bros., Sebringville.... | do ..... | 17½ | 4 | 18½ | 13½ | 33½ | 87 |
| B. Mathison, St. Paul's..... | G. Glow; W. Cap, Wisconsin No. 7 | 17 | 5 | 20 | 13 | 31½ | 86½ |
| Walter Rae, do R.R. 1. | W. C., Y. Dent.... | 17½ | 4 | 19 | 13 | 32½ | 86 |
| McNamara Bros., Stratford R.R. 1 | Bailey..... | 16¼ | 5 | 18½ | 13 | 31½ | 84¼ |
| Les. Ballantyne, do R.R. 3 | W. C., Y. Dent.... | 16 | 4 | 19 | 13½ | 31½ | 84 |
| F. Bell, St. Paul's, R.R. 2..... | Dent..... | 17 | 4 | 20 | 13 | 31½ | 83½*a* |
| Bert Litt, Sebringville, R.R. 1.. | Golden Glow..... | 15¾ | 4 | 19 | 14 | 30½ | 83¼ |
| L. J. Hammond, St. Paul's, R.R. 2..... | W. C., Y. Dent.... | 17½ | 5 | 12 | 13 | 33 | 80½ |
| PETERBOROUGH. | | | | | | | |
| DUMMER AND DOURO AGR. SOCIETY. | | | | | | | |
| *Judge—W. Hickson, Bobcaygeon.* | | | | | | | |
| Arthur Edwards, Warsaw, R.R. | Wisconsin No. 7... | 18½ | 19½ | 5 | 14 | 36 | 93 |
| Jas. Hawthorne, do R.R. 2 | W. C., Y. Dent.... | 18 | 18½ | 5 | 13 | 38 | 92½ |
| J. A. Crowe, Lakefield, R.R. 4. | Wisconsin No. 7... | 18½ | 18 | 5 | 14 | 36½ | 92 |
| W. Hayes, do ..... | do ... | 18 | 19½ | 5 | 15 | 34 | 91½ |
| R. G. Moore, Warsaw, R.R. 1 | do ... | 18½ | 19 | 4 | 14 | 35 | 90½ |
| Allen Payne, do ..... | do ... | 17½ | 18 | 4 | 14 | 36 | 89½ |
| D. Rose, do R.R. 1 | do ... | 17½ | 18½ | 5 | 14 | 32 | 87 |
| G. Payne, do R.R. 2 | Big Crop..... | 18½ | 17 | 5 | 13 | 32 | 83½*a* |
| Fred Morgan, do ..... | Mixed..... | 16½ | 17 | 5 | 13 | 32 | 82½*a* |
| Jas. Greystock, do ..... | Leaming..... | 16½ | 15 | 5 | 15 | 29 | 78½*a* |
| E. PETERBOROUGH AGR. SOCIETY. | | | | | | | |
| *Judge—W. Hickson, Bobcaygeon.* | | | | | | | |
| R. Cuthbertson, Norwood..... | E. Leaming..... | 18½ | 19½ | 5 | 15 | 35 | 91*a* |
| P. McConnell, do ..... | Wisconsin No. 7... | 19 | 19½ | 5 | 14 | 33 | 90½ |
| Andrew Knox, do ..... | Longfellow..... | 18 | 18 | 5 | 15 | 33½ | 89½ |
| Thompson Bros., Indian River, R.R. 3..... | Golden Glow..... | 18 | 17 | 5 | 15 | 34 | 89 |
| J. Sargent & Son, Westwood... | N. Dakota..... | 18 | 18 | 4½ | 15 | 33 | 88½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| PETERBOROUGH.—*Con.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| E. PETERBOROUGH AGR. SOCIETY.—*Continued.* | | | | | | | |
| C. A. Calder, Warsaw, R.R. 1.. | Golden Glow..... | 18 | 17¼ | 5 | 15 | 33 | 88¼ |
| Wm. Knox, Indian River..... | Bailey..... | 18 | 16 | 5 | 15 | 34 | 88 |
| G. Edwards, Norwood..... | E. Leaming..... | 18½ | 19 | 5 | 14 | 33 | 87½*a* |
| S. McMillan, do ..... | Big Crop..... | 19 | 18½ | 4½ | 15 | 31 | 86*a* |
| H. Dunham & Son, Trent Bridge | Leaming..... | 17 | 17 | 5 | 15 | 30 | 82*a* |
| PETERBOROUGH IND. AGR. SOCIETY. *Judge—D. J. Gibson, Newcastle.* | | | | | | | |
| J. G. Mann, Peterborough, R.R. 4..... | Wisconsin No. 7... | 17 | 4 | 17 | 14 | 36 | 88 |
| F. Jopling, Bridgenorth ..... | do ... | 17 | 3 | 18 | 13 | 35 | 86 |
| W. Anderson, Peterborough, R.R. 8 | Bountiful..... | 14½ | 5 | 18½ | 12 | 35½ | 83½*a* |
| W. Steinkrauss, do R.R. 4 | Big Crop..... | 16 | 5 | 18 | 13 | 33 | 83*a* |
| W. Robson, do R.R. 3 | Price of Nishna.... | 15½ | 5 | 18 | 14 | 32 | 82½*a* |
| W. Roseborough, do ..... | Leaming..... | 14 | 5 | 20 | 14 | 30½ | 81½*a* |
| J. D. Fowler, do R.R. 1 | Wisconsin No. 7... | 15½ | 5 | 16 | 14 | 30½ | 81 |
| C. E. Moore, do R.R. 2 | Leaming..... | 16 | 5 | 17 | 13½ | 31 | 80½*a* |
| R. H. Harrison, do R.R. 6 | Bountiful..... | 16 | 4½ | 16 | 13 | 32⅓ | 80*a* |
| B. Tully, do R.R. 3 | Field..... | 16 | 5 | 16½ | 14 | 30 | 79½*a* |
| Jno. O'Connor, do ..... | Leaming..... | 15 | 4 | 15 | 14 | 32½ | 78½*a* |
| W. White, do R.R. 4 | Bountiful..... | 15 | 5 | 17 | 14 | 29 | 78*a* |
| J. O. Ball, do R.R. 3 | Leaming..... | 15 | 4½ | 14 | 14 | 31½ | 77*a* |
| H. G. Webber, do R.R. 3 | Bountiful..... | 14½ | 5 | 16½ | 12½ | 29 | 75½*a* |
| F. Staples, do R.R. 3 | Leaming..... | 13 | 4½ | 17 | 14 | 27 | 73½*a* |
| PRINCE EDWARD. AMELIASBURG AGR. SOCIETY. *Judge—S. H. Treverton, Belleville.* | | | | | | | |
| J. S. Wallbridge, Rossmore.... | W. Cap..... | 17½ | 4 | 18 | 14 | 36 | 89½ |
| J. A. Walker, do .... | do ..... | 17½ | 4 | 18 | 13 | 34 | 86½ |
| J. R. Anderson, do .... | Wisconsin No. 7... | 17⅓ | 4 | 16 | 13 | 34½ | 85 |
| L. Wallbridge. do .... | W. Cap..... | 15½ | 4 | 17 | 13 | 35 | 84½ |
| J. S. Barber, do .... | Wisconsin No. 7... | 16 | 4 | 18 | 13 | 33 | 84 |
| D. M. Conklin, do .... | W. Cap..... | 15 | 3 | 15 | 13 | 34½ | 80½ |
| T. D. Wallbridge, do .... | Wisconsin No. 7... | 15 | 4 | 16 | 13 | 32 | 80 |
| E. E. Wallbridge, do .... | W. Cap..... | 14½ | 3½ | 15 | 12 | 34 | 79 |
| C. B. Parliament, Ameliasburg. | Longfellow..... | 16 | 3½ | 16 | 13 | 30 | 78½ |
| J. A. Weese, Rossmore..... | Wisconsin No. 7... | 15 | 3 | 15 | 13 | 32 | 78 |
| E. Williams, Ameliasburg..... | N. Dakota..... | 14 | 4 | 14 | 12 | 33 | 77 |
| T. Nightingale, Rossmore..... | W. Cap..... | 14 | 4 | 12 | 13 | 32½ | 75½ |
| A. N. Hillman, do .... | Wisconsin No. 7... | 14 | 3½ | 14 | 12 | 30 | 73½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| PRINCE EDWARD.—*Con.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| PRINCE EDWARD AGR. SOCIETY. | | | | | | | |
| *Judge—S. H. Treverton, Belleville.* | | | | | | | |
| B. R. Leavens, Bloomfield.. | Wisconsin No. 7... | 18 | 5 | 19 | 13 | 36 | 91 |
| E. Purtelle, do .. | do ... | 17½ | 4 | 18 | 14 | 36 | 89½ |
| G. Thompson, do .. | do ... | 17½ | 4½ | 18 | 14 | 35 | 89 |
| W. H. Gough & Son, do .. | do ... | 17 | 4½ | 18 | 14 | 35 | 88½ |
| A. B. Wilson, do .. | do ... | 17½ | 4½ | 18 | 14 | 34 | 88 |
| A. McDonald & Son, do .. | do ... | 17½ | 4 | 18 | 14 | 32 | 85½ |
| Morris Huff, do .. | do ... | 15 | 4 | 16 | 13 | 33½ | 81½ |
| M. Gilbert & Son, Demorestville | do ... | 15½ | 3½ | 16 | 13 | 33 | 81 |
| RUSSELL. | | | | | | | |
| RUSSELL AGR. SOCIETY. | | | | | | | |
| *Judge—Robt. McKay, Maxville.* | | | | | | | |
| H. F. Carscadden, Russell.... | W. Cap..... | 16½ | 4½ | 16 | 14 | 33 | 84 |
| Jno. Adams, do .... | Wisconsin No. 7... | 16½ | 4½ | 12 | 14 | 34½ | 81½ |
| W. P. Cherry, do .... | Wisconsin No. 7 and Bailey..... | 16 | 4½ | 18 | 7½ | 34½ | 80½ |
| Chester Cherry, do .... | W. Cap..... | 18 | 4 | 18 | 7 | 33 | 80 |
| H. H. Sheppard, do .... | Wisconsin No. 7... | 16 | 4½ | 16 | 13 | 30 | 79½ |
| R. Hamilton, do .... | W. Cap and Bailey.. | 16½ | 4½ | 17½ | 10 | 29½ | 78 |
| E. & R. Young, do .... | Wisconsin No. 7... | 16 | 4½ | 18½ | 13 | 25½ | 77½ |
| E. Hamilton, do .... | W. Cap and Bailey. | 15½ | ..... | 18 | 13 | 29½ | 76 |
| Edwin Hamilton, do .... | W. Cap..... | 16½ | 4½ | 18 | 8 | 28 | 75 |
| Wm. Booth, do .... | do ..... | 12½ | 4 | 16 | 13½ | 26½ | 72½ |
| Jno. Paul, do .... | W. Cap and Bailey. | 15½ | 4½ | 16½ | 8 | 25½ | 70 |
| WELLAND. | | | | | | | |
| BERTIE AGR. SOCIETY. | | | | | | | |
| *Judge—J. D. Steen, Meadowvale.* | | | | | | | |
| F. Sexsmith & Son, Ridgeway, R.R. 2..... | W. Cap..... | 19 | 4 | 19 | 14 | 38½ | 94½ |
| J. R. Phillips, Fort Erie..... | Excelsior..... | 19 | 5 | 19 | 15 | 38 | 94*a* |
| H. Miller & Sons, Bridgeburg.. | do ..... | 19 | 4 | 19 | 14½ | 39 | 93½*a* |
| J. W. Jewson, Fort Erie, R.R. 1 | Golden Glow..... | 19 | 4 | 19 | 14 | 37 | 93 |
| G. W. Miller, Stevensville, R.R.2 | Excelsior..... | 19 | 4 | 18 | 14 | 39 | 92*a* |
| J. McGaw, Fort Erie ..... | W. Cap..... | 18 | 5 | 20 | 14 | 34½ | 91½ |
| Geo. Sexsmith, Ridgeway, R.R.2 | do ..... | 17 | 4 | 17 | 15 | 38 | 91 |
| W. Woehl, Bridgeburg, R.R. 1. | Golden Glow..... | 16 | 4 | 18½ | 15 | 37 | 90½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### CORN.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from smut and insects. | Thoroughness of cultivation. | Purity of variety. | †Yield of fodder and grain. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| WELLAND.—*Continued.* | | [20] | [5] | [20] | [15] | [40] | [100] |
| BERTIE AGR. SOCIETY.—*Con.* | | | | | | | |
| E. O. Disher, Ridgeway, R.R. 2 | Excelsior | 19 | 4 | 16 | 15 | 38 | 90*a* |
| G. R. Mann, do | W. Cap | 19 | 4 | 15½ | 15 | 36 | 89½ |
| M. W. Sexsmith & Son, Ridgeway, R.R. 2 | Wisconsin No. 7 | 17 | 4 | 16½ | 15 | 36 | 88½ |
| E. Miller, Stevensville, R.R. 2 | Excelsior | 18 | 4 | 18 | 14 | 36 | 88*a* |
| Jno. Curtis, Bridgeburg, R.R. 1 | Longfellow | 14 | 4 | 17 | 15 | 33 | 83 |
| W. Wale, do R.R. 1 | Leaming | 13 | 4 | 16 | 14 | 29 | 74*a* |
| WELLINGTON. | | | | | | | |
| C. WELLINGTON AGR. SOCIETY. | | | | | | | |
| *Judge—F. A. Maas, Streetsville.* | | | | | | | |
| R. Caldwell, Fergus | Wisconsin No. 7 | 20 | 5 | 19 | 15 | 40 | 99 |
| J. Lowe, Elora, R.R. | Golden Glow | 20 | 5 | 19 | 15 | 37 | 96 |
| J. P. Bosomworth, Elora, R.R. | Wisconsin No. 7 | 17 | 5 | 18 | 15 | 32 | 87 |
| W. Hutcheon, Rockwood, R.R.1 | do | 14 | 4 | 16 | 12 | 30 | 76 |
| J. H. Anderson, Fergus | do | 15 | 3 | 12 | 15 | 30 | 75 |
| Ross Bros., do | Golden Glow | 16 | 5 | 15 | 10 | 28 | 74 |
| J.H. Benham, Rockwood, R.R.4 | Wisconsin No. 7 | 16 | 4 | 8 | 15 | 29 | 72 |
| Colbeck Bros., Elora, R.R. | do | 16 | 5 | 5 | 15 | 30 | 71 |
| R. S. Gale, do | do | 14 | 5 | 15 | 10 | 26 | 70 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | †Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| ALGOMA. | | [15] | [17] | [20] | [10] | [38] | [100] |
| BRUCE MINES AGR. SOCIETY. | | | | | | | |
| *Judge—G. C. Chamberlain, Ottawa.* | | | | | | | |
| Cliff Mills, Bruce Mines, R.R. 1 | Carman No. 1 | 14 | 16½ | 19 | 10 | 26½ | 86 |
| W. T. Vaughan, do | do | 12½ | 14½ | 18 | 10 | 27 | 82 |
| J. Schaull, do | Green Mountain | 11½ | 11½ | 17 | 8½ | 27½ | 76 |
| Jas. Vaughan, do | Carman No. 1 | 11 | 14 | 16 | 9½ | 24¾ | 74¾ |
| F. Hopper, do | Beauty of Hebron | 9½ | 15 | 17 | 9 | 24½ | 73*a* |
| Leslie Mills, do | do | 10½ | 13½ | 18 | 9 | 23½ | 72½*a* |
| Rich. Jeffrey, do | Green Mountain | 13 | 14½ | 16 | 8 | 19½ | 71 |
| Alex. Schaull, do | Carman No. 1 | 13 | 15 | 11 | 7 | 24 | 70 |
| NORTH SHORE AGR. SOCIETY. | | | | | | | |
| *Judge—G. C. Chamberlain, Ottawa.* | | | | | | | |
| Wm. Majaury, Echo Bay | Green Mountain | 13½ | 16½ | 19 | 9½ | 28 | 86 |
| Jas. Keating, Laird | do | 11 | 16½ | 18 | 8 | 24 | 77½ |
| A. L. Tuckett, Echo Bay | Gold Coin | 11 | 16 | 17 | 8 | 24 | 76 |
| T. Larocque, Laird | Green Mountain | 11½ | 16 | 15 | 9½ | 21½ | 73½ |
| Wm. Barkley, Bar River | Carman No. 1 | 11 | 15 | 15 | 9 | 22¼ | 72¼ |
| E. V. Evoy, do | Irish Cobbler | 11½ | 15 | 15 | 5½ | 23½ | 70½ |
| THESSALON AGR. SOCIETY. | | | | | | | |
| *Judge—G. C. Chamberlain, Ottawa.* | | | | | | | |
| H. Hagen, Thessalon, R.R. 2 | Beauty of Hebron | 13½ | 16 | 19 | 10 | 30½ | 87*a* |
| A. J. Bell, Sowerby | Green Mountain | 13 | 16 | 18½ | 8½ | 30½ | 86½ |
| J. McDougall, do | Prize Winner | 13 | 15½ | 19 | 9½ | 30 | 85*a* |
| Isaac Leach, Thessalon | Beauty of Hebron | 12 | 16 | 16 | 10 | 28¼ | 80¼*a* |
| Duncan McLennan, do | do | 9½ | 15 | 18 | 9 | 30 | 79½*a* |
| Norman Pace, Bruce Mines, R.R. 1 | Carman No. 1 | 11 | 13 | 18 | 9½ | 27 | 78½ |
| A. A. Nolin, Thessalon | Gold Coin | 12½ | 14½ | 19 | 7 | 24½ | 77½ |
| J. D. McLennan, do | Green Mountain | 11 | 14 | 18 | 10 | 23 | 76 |
| W. J. Weir, do R.R. 2 | do | 11 | 14 | 12 | 10 | 28½ | 75½ |
| Wm. Gillespie, do | Beauty of Hebron | 10 | 15½ | 16½ | 9½ | 25 | 74½*a* |
| Proud Bros., Bruce Mines | Comet | 13 | 16 | 19 | 8 | 18 | 72*a* |
| A. I. Hopkins, Thessalon, R.R.2 | Irish Cobbler | 12 | 11½ | 18 | 5 | 24 | 70½ |

*General appearance—Considering method of planting, stand of crop, and vigor of growth.

†Apparent Yield—Considering weight of marketable potatoes, per square yard, quality, smoothness and uniformity of shape, state and uniformity of maturity, and freedom from sunburn.

*a*Points deducted for non-standard variety.

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | †Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| **BRUCE.** | | [15] | [17] | [20] | [10] | [38] | [100] |
| HEPWORTH AGR. SOCIETY. | | | | | | | |
| *Judge—A. G. Richmond, Perth.* | | | | | | | |
| Jas. Doubt, Hepworth, R.R. 1 | Empire State | 13 | 15½ | 17½ | 9½ | 31½ | 85*a* |
| Jno. Eldridge, do | Green Mountain | 13 | 8½ | 17 | 9½ | 34 | 82 |
| Robt. Gates, do | Empire State | 13½ | 15½ | 18 | 9½ | 26½ | 81*a* |
| H. J. Wilson, do | do | 9 | 15 | 18 | 9½ | 29½ | 79*a* |
| A. Forbes, do | do | 12½ | 15 | 17 | 9½ | 26½ | 78½*a* |
| A. F. Cunningham, Hepworth | Amer. Wonder | 11 | 15½ | 16 | 9½ | 27 | 77*a* |
| A. C. Walker, Hepworth, R.R. 1 | Empire State | 10½ | 14 | 16 | 9½ | 28 | 76*a* |
| C. A. Millard, do | do | 11½ | 15 | 17 | 9½ | 20½ | 71½*a* |
| H. Anderson, do | Hustler | 11 | 14 | 18½ | 3 | 26½ | 71*a* |
| WIARTON AGR. SOCIETY. | | | | | | | |
| *Judge—A. G. Richmond, Perth.* | | | | | | | |
| G. H. Loney, Wiarton, R.R. 2 | Empire State | 14 | 16 | 19 | 9½ | 31 | 87½*a* |
| A. T. Baldwin, do | Green Mountain | 14 | 15 | 18 | 9½ | 28½ | 85 |
| Wm. Lembke, do | do | 12 | 16 | 17½ | 8½ | 28½ | 82½ |
| A. R. Lembke, do | do | 12½ | 15 | 17 | 8½ | 25½ | 78½ |
| E. J. Loney, Oxenden | Lincoln | 10½ | 14 | 17 | 6 | 32½ | 78*a* |
| T. H. Rathwell, Wiarton, R.R. 3 | Empire State | 11½ | 16½ | 15½ | 8½ | 27 | 77*a* |
| F. Carder, do R.R. 2 | Green Mountain | 12½ | 15½ | 18 | 9 | 21½ | 76½ |
| A. W. Hahn, do R.R. 2 | do | 11 | 16 | 12 | 7½ | 25½ | 72 |
| A. McCoag, do R.R. 1 | Amer. Wonder | 11 | 16 | 14 | 9 | 23½ | 71½*a* |
| CARLETON. | | | | | | | |
| METCALFE AGR. SOCIETY. | | | | | | | |
| *Judges—H. W. Scott and R. F. Cosgrove, Sudbury.* | | | | | | | |
| R. W. McKeown, Russell | Irish Cobbler | 15 | 15½ | 18½ | 10 | 34 | 93 |
| H. A. Woods, Metcalfe | do | 13½ | 14½ | 18 | 10 | 30 | 86 |
| D. J. McInnes, Edwards, R.R. 1 | Green Mountain | 14 | 15 | 18 | 8 | 27 | 82 |
| J. D. Wallace, do R.R. 2 | do | 9½ | 11 | 16 | 7 | 35 | 78½ |
| R. N. & J. E. Woods, Metcalfe, R.R. 3 | Mixed | 9½ | 12 | 16 | 9 | 30 | 74½*a* |
| J. P. Gillisie, Edwards, R.R. 1 | Freeman | 13 | 14 | 16 | 5 | 28 | 74*a* |
| W. A. Waddell, do R.R. 2 | Green Mountain | 9½ | 11½ | 19 | 8 | 25 | 73 |
| J. P. Carson, do R.R. 1 | do | 11 | 11½ | 16⅓ | 8 | 24½ | 71½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | †Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| DUFFERIN. | | [15] | [17] | [20] | [10] | [38] | [100] |
| DUFFERIN AGR. SOCIETY. | | | | | | | |
| *Judges—G. C. Chamberlain, Ottawa; A. Richmond, Perth.* | | | | | | | |
| Nelson Black, Orangeville, R.R.2 | Green Mountain | 13½ | 16 | 19½ | 10 | 32½ | 91½ |
| G. L. Dodds, Glencross | do | 13½ | 16 | 19 | 10 | 29½ | 88 |
| J. H. Jackson, Sr., Orangeville, R.R. 1 | do | 14 | 15 | 19½ | 9 | 30 | 87½ |
| E. T. B. Corbett, do R.R. 6 | do | 13 | 14½ | 18½ | 10 | 28½ | 84½ |
| W. P. Dodds, do | do | 12 | 16 | 15 | 9½ | 30½ | 83 |
| W. Smith, Amaranth Sta., R.R.1 | Irish Cobbler | 12 | 14½ | 18 | 9½ | 28 | 82 |
| J. S. Martin, do R.R. 1 | do | 13½ | 15½ | 19½ | 8 | 24½ | 81 |
| Joshua Bradley, do | do | 13 | 14 | 19 | 4 | 30 | 80 |
| W. C. Watson, Orangeville, R.R. 6 | Green Mountain | 11 | 14 | 18½ | 10 | 25 | 78½ |
| J. Johnston, do | do | 13½ | 14½ | 19 | 9½ | 21½ | 78 |
| J. D. Hoare, Amaranth Sta., R.R. 1 | do | 12 | 13 | 18½ | 10 | 24 | 77½ |
| M. McCormick, do | Davies Warrior | 13 | 15 | 17½ | 7 | 24½ | 77 |
| Jos. Carney, do | Green Mountain | 12 | 13 | 19 | 9½ | 23 | 76½ |
| W. H. Gillespie, Orangeville, R.R. 3 | do | 12½ | 12 | 18 | 9½ | 24 | 76 |
| W. L. Ewing, do R.R. 4 | do | 11 | 14½ | 17½ | 10 | 23 | 76 |
| B. C. Cook, do R.R. 6 | do | 11 | 12 | 18 | 8½ | 24½ | 74 |
| W. H. Hunter, do R.R. 2 | do | 12 | 15 | 16 | 9 | 18 | 70 |
| DUFFERIN CEN. AGR. SOCIETY. | | | | | | | |
| *Judges—G. C. Chamberlain, Ottawa; A. G. Richmond, Perth.* | | | | | | | |
| W. J. Davison, Shelburne, R.R. 4 | Green Mountain | 13 | 14½ | 19½ | 10 | 36 | 93 |
| W. J. Hamilton, do R.R. 5 | Davies Warrior | 12½ | 15 | 18 | 9 | 33½ | 88 |
| Harold Leitch, Horning's Mills, R.R. 1 | Green Mountain | 12 | 12½ | 19 | 10 | 34 | 87½ |
| A. Greer, Mansfield, R.R. 1 | Empire State | 12 | 15 | 19 | 10 | 30½ | 84½ |
| A. H. Davison, Shelburne, R.R.4 | Green Mountain | 11½ | 12 | 19 | 10 | 30½ | 83 |
| Wes. Graham, Honeywood | Empire State | 14½ | 16 | 19½ | 9½ | 24½ | 82*a* |
| G. E. Foster, do | Green Mountain | 11½ | 15½ | 19 | 10 | 24½ | 80½ |
| T. G. Reaburn, Shelburne, R.R.4 | do | 11 | 12 | 19 | 9 | 28½ | 79½ |
| Roy Best, do R.R. 2 | do | 11½ | 13½ | 18 | 9½ | 25½ | 78 |
| R. J. Hall, do R.R. 2 | do | 10½ | 14 | 16 | 9 | 27½ | 77 |
| J. H. McKee, do R.R. 4 | do | 12½ | 14½ | 17½ | 8 | 23½ | 76 |
| T. J. Watson, Corbetton, R.R.4 | Rural New Yorker | 13 | 16 | 15 | 6 | 27½ | 75½ |
| Lester Hill, Shelburne, R.R. 4 | Empire State | 12½ | 14½ | 16 | 10 | 21½ | 72½*a* |
| Alex. McFarlane, Jessopville, R.R. 1 | Irish Cobbler | 9½ | 16 | 19 | 7 | 18½ | 70 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | †Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| DUFFERIN.—*Continued.* | | [15] | [17] | [20] | [10] | [38] | [100] |
| EAST LUTHER AGR. SOCIETY. | | | | | | | |
| *Judge—A. Richmond, Perth.* | | | | | | | |
| W. L. Jelly, Grand Valley, R.R. 1 | Delaware | 13½ | 14 | 19½ | 9 | 29½ | 85½ |
| Hy. Berry, do R.R. 3 | Irish Cobbler | 13 | 16 | 19½ | 10 | 26½ | 85 |
| W. Wilmot, do R.R. 3 | Green Mountain | 13 | 14½ | 19 | 10 | 27½ | 84 |
| E. & G. Richardson, do R.R. 3 | do | 11 | 13 | 19½ | 10 | 29½ | 83 |
| R. H. Wansborough, Laurel, R.R. 2 | do | 10½ | 13 | 17 | 9 | 33 | 82½ |
| Eli Newson, Grand Valley, R.R. 2 | Delaware | 13 | 15 | 19½ | 9 | 24½ | 81½ |
| Norman Elgie, do R.R. 1 | do | 13 | 15½ | 18 | 8½ | 24 | 79 |
| Wm. Byers, do R.R. 4 | Empire State | 12½ | 15 | 18 | 9 | 26 | 78½*a* |
| Jno. Bryan, Laurel, R.R. 2 | Green Mountain | 11½ | 13 | 16 | 10 | 27 | 77½ |
| J.S. Sproat, Grand Valley, R.R. 1 | do | 10 | 13 | 16 | 9½ | 27½ | 76 |
| Jno. Nodwell, do R.R. 2 | do | 10 | 12 | 18 | 10 | 21½ | 71½ |
| W. E. Turner, do R.R. 3 | Rural Type | 11 | 16 | 18 | 5 | 22 | 70*a* |
| DURHAM. | | | | | | | |
| CARTWRIGHT AGR. SOCIETY. | | | | | | | |
| *Judge—A. Richmond, Perth.* | | | | | | | |
| M. C. Smith, Burketon, R.R. 1 | Empire State | 13¾ | 15½ | 16 | 9¾ | 34 | 87*a* |
| L. E. Mountjoy, Burketon Jct., R.R. 1 | Noxall | 14 | 15 | 17¼ | 9 | 32 | 85¼*a* |
| Rich. Suckut, Nestleton Sta. | Dooley | 14 | 15½ | 17¼ | 6½ | 29½ | 83 |
| H. Beacock, Nestleton | Irish Cobbler | 13¼ | 14½ | 16¼ | 8¾ | 29 | 82 |
| S. H. Malcolm, Nestleton Sta. | Dooley | 14 | 15½ | 17¼ | 6¾ | 27½ | 81¼ |
| Earl Dorell, Nestleton | Rural New Yorker | 12¾ | 15½ | 17 | 7½ | 28 | 78¾ |
| Oscar Edwards, Nestleton Sta. | Green Mountain | 13 | 13 | 17 | 4 | 29½ | 76½ |
| G. M. Marlow, Nestleton | Noxall | 14 | 14 | 17 | 7½ | 23½ | 74*a* |
| W. C. Ferguson & Son, Blackstock | Green Mountain | 11 | 15 | 17 | 9½ | 20½ | 73 |
| GREY. | | | | | | | |
| ROCKLYN AGR. SOCIETY. | | | | | | | |
| *Judge—A. Richmond, Perth.* | | | | | | | |
| G. L. Currie, Meaford, R.R. 2 | Green Mountain | 14 | 16½ | 19½ | 9½ | 35 | 94½ |
| W. H. Sewell, Blantyre | Amer. Wonder | 13½ | 15⅓ | 19 | 9 | 32 | 87*a* |
| J. J. Johnston, Markdale, R.R. 2 | Green Mountain | 13½ | 16½ | 19½ | 9½ | 27½ | 86½ |
| T. Langtree, Meaford, R.R. 2 | Amer. Wonder | 12½ | 16 | 17½ | 9½ | 32 | 85½*a* |
| W. Thompson, do R.R. 4 | Carman No. 1 | 13 | 15 | 18 | 9½ | 29 | 84½ |
| J. Yeadell, do R.R. 2 | Green Mountain | 12½ | 15 | 18½ | 9½ | 28 | 83½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | †Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| GREY.—*Continued.* | | [15] | [17] | [20] | [10] | [38] | [100] |
| ROCKLYN AGR. SOCIETY.—*Con.* | | | | | | | |
| W. J. Lush, Markdale, R.R. 2. | Amer. Wonder | 10 | 10½ | 19 | 9½ | 33½ | 80½*a* |
| R. S. Clugston, Rocklyn, R.R.2 | Burpee Early | 11½ | 13 | 18 | 9½ | 29½ | 79½*a* |
| J. A. Cook, do | do | 11½ | 12¼ | 17 | 9½ | 30½ | 79*a* |
| Jno. King, Meaford, R.R. 4 | Amer. Wonder | 12 | 15½ | 17 | 9 | 26½ | 78*a* |
| J. A. Perry, do R.R. 2 | do | 11½ | 11½ | 14 | 9½ | 32 | 76½ |
| G. Erskine, Markdale, R.R. 2. | Elephant | 10½ | 11½ | 19 | 9 | 27½ | 75½*a* |
| HALTON. | | | | | | | |
| NELSON AND BURLINGTON AGR. SOCIETY. | | | | | | | |
| *Judge—A. Richmond, Perth.* | | | | | | | |
| W. L. Smith, Freeman, R.R. 2 | Dooley | 12½ | 15 | 18 | 9½ | 36 | 91 |
| T. Fothergill, do R.R. 2 | do | 12½ | 16½ | 19 | 9½ | 32½ | 90 |
| F. Wilkinson, do R.R. 2. | do | 12 | 15⅝ | 19 | 9½ | 31½ | 87½ |
| F. Spence, do R.R. 1. | do | 13 | 16 | 19½ | 8 | 29 | 85½ |
| W. Attridge, Waterdown | Comet | 12 | 15½ | 17½ | 9 | 32 | 84*a* |
| Jabez Clark, Burlington | Green Mountain | 12½ | 14 | 17 | 9 | 30 | 82½ |
| Colin Smith, Freeman, R.R. 2. | Dooley | 12 | 12 | 18 | 9½ | 30 | 81½ |
| Jno. Heslop, do | do | 13 | 14 | 19 | 9½ | 24½ | 80 |
| Jos. Picket, do | do | 11 | 15 | 17 | 9 | 26½ | 78½ |
| HASTINGS. | | | | | | | |
| BANCROFT AGR. SOCIETY. | | | | | | | |
| *Judge—R. F. Cosgrove, Sudbury.* | | | | | | | |
| S. A. Tripp, Bancroft, R.R. 2. | Delaware | 13½ | 14½ | 17¾ | 10 | 37 | 92¾ |
| G. Shanick, Musclow | Irish Cobbler | 14 | 14½ | 19 | 8¾ | 35 | 91¼ |
| Wm. Tice, Detlor | King's | 14 | 16½ | 19½ | 10 | 33 | 91*a* |
| E. Vardy, Bancroft | Beauty of Hebron | 14 | 14 | 19¼ | 10 | 35 | 90¼*a* |
| F. Froats, do | Irish Cobbler | 13¼ | 15½ | 19 | 9 | 32 | 88¾ |
| W. E. Wiggins, do R.R. 2 | King's | 9¾ | 15 | 17¼ | 10 | 35 | 84*a* |
| D. G. Rutledge, Hybla, R.R. 1. | Delaware | 9¾ | 14½ | 17½ | 10 | 32 | 83¾ |
| John Fraser, Bancroft | do | 11¼ | 15¼ | 15 | 10 | 30 | 81½ |
| W. Maxwell, do R.R. 1 | Irish Cobbler | 11½ | 15¼ | 17 | 9 | 28 | 80¾ |
| Lewis Moore, do | do | 10½ | 16 | 17¼ | 9 | 28 | 80¾ |
| W. E. Kelusky, do | do | 11½ | 15¾ | 17 | 8 | 28 | 80¼ |
| Scott Vader do | do | 7½ | 16 | 17½ | 10 | 29 | 80 |
| H. D. Lancaster, Bronson | do | 9 | 12¾ | 19¼ | 10 | 28¾ | 79¾ |
| F. Kelusky, Bancroft | do | 9 | 13 | 17½ | 10 | 29 | 78½ |
| J. B. Carr, Musclow | Irish Cobbler and G. Mountain | 13 | 15¾ | 14 | 7¾ | 27 | 77½ |
| C. W. Bierworth | Amer. Wonder | 13¼ | 13¾ | 16 | 10 | 26 | 77*a* |
| Jno. O'Brien, Bancroft, R.R. 2. | Carman No. 1 | 9 | 14 | 14 | 10 | 29½ | 76½ |
| Ed. Martin, L'Amable | Green Mountain | 9½ | 14¼ | 17½ | 10 | 21½ | 72¾ |
| Jno. Labarge, Bancroft, R.R. 2. | Early Season | 7½ | 10 | 19 | 10 | 25½ | 70 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | †Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| HASTINGS.—*Continued.* | | [15] | [17] | [20] | [10] | [38] | [100] |
| MADOC AGR. SOCIETY. | | | | | | | |
| *Judge—R. F. Crossgrove, Sudbury.* | | | | | | | |
| Jos. Chambers, Eldorado | Comet | 13½ | 15 | 18 | 10 | 37 | 91½*a* |
| C. Robinson, do | Hustler | 14 | 15½ | 18½ | 10 | 34½ | 90½*a* |
| J. S. Empey, do | do | 14 | 16 | 18 | 10 | 32 | 88*a* |
| H. Blakely, do | Comet | 14 | 15 | 18½ | 10 | 29½ | 85*a* |
| Jas. Moore, Queensboro | do | 11¾ | 15 | 17 | 9½ | 33 | 84¼*a* |
| H. Rollins, Madoc | do | 12½ | 15½ | 17½ | 10 | 29 | 82½*a* |
| S. McCary, Eldorado | Green Mountain | 13 | 8 | 17½ | 10 | 33½ | 82 |
| Wm. Boyle, do | Comet | 10½ | 14 | 18 | 10 | 27 | 77½*a* |
| Jas. Caskey, Madoc | Green Mountain | 11¼ | 15 | 15 | 10 | 19 | 70¼ |
| WOLLASTON AGR. SOCIETY. | | | | | | | |
| *Judge—R. F. Crossgrove, Sudbury.* | | | | | | | |
| D. Maitland, The Ridge | Green Mountain | 13½ | 16½ | 19¼ | 10 | 37 | 96¼ |
| Herb. Moore, do | do | 14 | 16½ | 19¼ | 10 | 36 | 95¾ |
| Geo. Bullied, Coe Hill | do | 13¼ | 16 | 19¼ | 10 | 32 | 90½ |
| Dan Henderson, The Ridge | do | 13¾ | 15¾ | 18½ | 10 | 30 | 88 |
| Erwin Moore, Lake | Gold Coin | 12½ | 15¾ | 18 | 9½ | 26 | 81¾ |
| H. Johnston, Coe Hill | Green Mountain | 13 | 15¾ | 17½ | 10 | 22 | 78¼ |
| Robt. Thomson, The Ridge | do | 9 | 15½ | 17 | 8½ | 28 | 78 |
| Jno. Leland, Coe Hill | do | 11 | 12 | 19 | 10 | 25½ | 77½ |
| Rex. Hennessy, do | Beauty of Hebron | 12¾ | 13½ | 17¼ | 10 | 21½ | 73*a* |
| Alb. Danford, do | Irish Cobbler | 12 | 14 | 15 | 7½ | 23 | 71½ |
| KENORA. | | | | | | | |
| DRYDEN AGR. SOCIETY. | | | | | | | |
| *Judge—R. F. Crossgrove, Sudbury.* | | | | | | | |
| Jno. Fisher, Dryden | Early Eureka | 14½ | 16 | 18½ | 10 | 37 | 96 |
| T. H. Lewis, Oxdrift | Green Mountain | 14¼ | 15½ | 19¾ | 10 | 36¼ | 95¾ |
| W. W. Howell, do | Irish Cobbler | 12 | 15 | 18½ | 10 | 31 | 86½ |
| E. W. Wice, Dryden | Carman No. 1 | 11½ | 15 | 15 | 10 | 31½ | 83 |
| Jno. Adams, Oxdrift | Green Mountain | 10 | 14 | 17½ | 9 | 27 | 77½ |
| D. F. McKenzie, Eagle River | Irish Cobbler | 9¼ | 14¾ | 15 | 10 | 26¼ | 75¼ |
| Jno. McKay, Dryden | Green Mountain | 11 | 14¾ | 15 | 6½ | 27 | 74¼ |
| W. D. Neily, Oxdrift | Irish Cobbler | 8½ | 15 | 16 | 6 | 28 | 73½ |
| J. M. Hutchinson, Dryden | Green Mountain | 9½ | 14½ | 13 | 9 | 25½ | 71½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | †Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| **MIDDLESEX.** | | | | | | | |
| CARADOC AGR. SOCIETY. | | [15] | [17] | [20] | [10] | [38] | [100] |
| *Judge—A. Richmond, Perth.* | | | | | | | |
| D. Campbell, Mt. Brydges, R.R. 2 | Dooley | 14 | 14½ | 19 | 9½ | 36½ | 93½ |
| D. A. McNeil, Strathroy, R.R. 1 | do | 11½ | 14 | 18 | 9½ | 33½ | 86½ |
| G. W. Brown, do | do | 13½ | 13½ | 19 | 9½ | 30½ | 86 |
| J. S. Walker, Mt. Brydges, R.R. 2 | do | 13½ | 14 | 17½ | 9½ | 31 | 85½ |
| J. T. Crawford, Strathroy, R.R.1 | do | 12 | 15 | 18 | 9 | 31 | 85 |
| Hy. Weld, Delaware | do | 13½ | 15½ | 19 | 5½ | 30½ | 84 |
| Alex. Lamont, Mt. Brydges, R.R. 2 | do | 13 | 14½ | 16 | 9½ | 30½ | 83½ |
| J. Peters, do R.R. 3 | do | 14 | 15 | 16½ | 9½ | 27 | 82 |
| Norman Curtis, do R.R. 2 | do | 12 | 16 | 17 | 3 | 27½ | 75½ |
| M. S. Leitch, Strathroy, R.R. 1 | do | 12½ | 11 | 16 | 9 | 26½ | 75 |
| D. McCallum, Mt. Brydges, R.R. 2 | do | 9½ | 15 | 12 | 9 | 27½ | 73 |
| Archie Graham, Strathroy, R.R. 1 | do | 11 | 10 | 16 | 5½ | 30 | 72½ |
| D. M. McNeil, do | do | 10½ | 11 | 16 | 9½ | 24½ | 71½ |
| C. M. Trott, Mt. Brydges, R.R.2 | do | 11½ | 14 | 18 | 6 | 21½ | 71 |
| **MUSKOKA.** | | | | | | | |
| GRAVENHURST AND MUSKOKA AGR. SOCIETY. | | | | | | | |
| *Judge—F. W. Presant, Blenheim.* | | | | | | | |
| S. Polmateer, Gravenhurst | Empire State | 14 | 14 | 17 | 10 | 33½ | 86½*a* |
| Wm. White, do | Delaware | 12¾ | 14 | 18½ | 10 | 31 | 86¼ |
| Wallace Ruttan, do | Green Mountain | 12 | 13½ | 18 | 10 | 30½ | 84 |
| Rt. McKay, do | Can. Standard | 12½ | 15½ | 19 | 9 | 29½ | 83½*a* |
| Josh. Shortt, do | Empire State | 10 | 16 | 17 | 10 | 26½ | 77½*a* |
| Jesse White, do | Delaware | 11 | 15 | 17 | 10 | 24 | 77 |
| Harold Hammond, do | Green Mountain and Gold Coin | 10½ | 15½ | 16½ | 6½ | 27 | 76 |
| W. H. Tincombe, do | Empire State | 12 | 14 | 17 | 10 | 22½ | 73½ |
| MEDORA AND WOOD AGR. SOCIETY. | | | | | | | |
| *Judge—F. W. Presant, Blenheim.* | | | | | | | |
| F. W. Knight, Brackenrig | Gold Coin | 10½ | 15½ | 16 | 10 | 31 | 83 |
| Alex. Ennis, Port Carling | do | 12½ | 11 | 17½ | 9 | 23 | 78 |
| R. C. Butler, Point Kaye | Green Mountain | 11½ | 12 | 18½ | 9 | 23½ | 74½ |
| L. Butler, do | Green Mountain | 11½ | 12 | 18½ | 9 | 23 | 74 |
| H. J. Foulkes, Brackenrig | Early King | 11 | 12½ | 15 | 10 | 27 | 73½*a* |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| MUSKOKA.—*Continued.* | | [15] | [17] | [20] | [10] | [38] | [100] |
| N. Muskoka Agr. Society. | | | | | | | |
| *Judge—F. W. Presant, Blenheim.* | | | | | | | |
| Wm. Sinclair, Huntsville | Green Mountain | 12 | 15½ | 19 | 9½ | 33½ | 89½ |
| Jno. Pleace, Canal | do | 13 | 14½ | 18 | 10 | 30½ | 86 |
| T. R. Hill, Hillside | do | 11 | 16 | 18 | 10 | 30 | 85 |
| Jos. E. May, Ravenscliffe | do | 12½ | 15½ | 17 | 9 | 30 | 84 |
| Jno. Turnbull, Canal | do | 12 | 13 | 17½ | 10 | 26 | 78½ |
| S. Martin, Ravenscliffe | do | 10 | 14 | 17½ | 9 | 25 | 75½ |
| Jno. Patterson, Huntsville | do | 9½ | 16 | 16 | 8 | 25 | 74½ |
| J. D. Scott, do | Irish Cobbler | 10 | 15 | 15½ | 9 | 23½ | 73 |
| A. Cockram, do | Delaware and Green Mountain | 11 | 11 | 15 | 9 | 26 | 72 |
| S. Muskoka Agr. Society. | | | | | | | |
| *Judge—F. W. Presant, Blenheim.* | | | | | | | |
| Wm. Naismith, Falkenburg | Dooley | 13½ | 16 | 19½ | 10 | 36 | 95 |
| H. L. Goltz, Bardsville | Gold Coin | 12¼ | 16 | 18½ | 10 | 32¾ | 89½ |
| Rich. Dinner, Ziska | Green Mountain | 10 | 14½ | 17 | 10 | 28½ | 80 |
| Campbell & Richards, Bracebridge | Delaware | 12½ | 11 | 18½ | 9 | 26 | 77 |
| Dan. Nichols, Bracebridge | Empire State | 12 | 14 | 19 | 8½ | 25 | 76½*a* |
| H. E. Beaumont, do | do | 10 | 12½ | 17 | 10 | 28½ | 76*a* |
| Hy. Richards, do | Delaware | 11½ | 10 | 18½ | 9 | 26½ | 75⅓ |
| C. H. Kaye, do | Green Mountain | 11 | 14½ | 18 | 5½ | 25½ | 74½ |
| J. B. Kaye, do | do | 9½ | 15 | 14 | 10 | 23 | 71 |
| Stephenson and Watt Agr. Society. | | | | | | | |
| *Judge—F. W. Presant, Blenheim.* | | | | | | | |
| Hy. Creasor, Ullswater | Davies Warrior | 12 | 16 | 17½ | 10 | 34½ | 90 |
| H. Patterson, Utterson | Delaware | 11½ | 13½ | 19 | 10 | 33 | 87 |
| Leslie Bunn, Ullswater | Green Mountain | 12½ | 14½ | 17 | 10 | 32 | 86 |
| R. D. Brown, Port Sydney | World's Wonder | 12½ | 15½ | 19½ | 10 | 29½ | 85*a* |
| Jos. Ryan, Raymond | Green Mountain | 10½ | 11½ | 17 | 10 | 30½ | 79½ |
| Alf. Kay, Port Sydney | World's Wonder | 8⅓ | 13⅓ | 14 | 9 | 27½ | 70½*a* |

Note.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | †Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| ONTARIO. | | [15] | [17] | [20] | [10] | [38] | [100] |
| SCOTT AGR. SOCIETY. | | | | | | | |
| *Judges—E. N. Buckley, Guelph; A. Richmond, Perth.* | | | | | | | |
| W. J. Rynard, Zephyr | Green Mountain | 13½ | 15½ | 18 | 9½ | 34½ | 91 |
| Wilmot Bain, do | do | 11½ | 14 | 18½ | 9½ | 32½ | 86 |
| G. N. Harrison, Uxbridge, R.R. 2 | | 11½ | 15 | 18½ | 9½ | 32 | 84½*a* |
| S. Bain, do | Green Mountain | 12 | 14½ | 17½ | 9½ | 29½ | 83 |
| F. Walker, Zephyr | do | 12¾ | 15 | 17½ | 9¼ | 27½ | 82 |
| Thos. Sellers, do | do | 11½ | 13 | 18½ | 9½ | 27½ | 80 |
| W. H. Taylor, Pefferlaw, R.R. 1 | do | 12 | 15 | 17½ | 9¼ | 25 | 79 |
| L. Bagshaw, Uxbridge, R.R. 2 | do | 12¼ | 14½ | 15 | 9¼ | 24½ | 75½ |
| W. M. Rynard, Zephyr | do | 9 | 12½ | 18 | 8 | 24½ | 72 |
| Amos Snowden, do | do | 10¾ | 14 | 17 | 8½ | 20 | 70¼ |
| PARRY SOUND | | | | | | | |
| ARMOUR, RYERSON AND BURK'S FALLS AGR. SOCIETY. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| A. M. Marsden, Burk's Falls, R.R. 1 | Empire State | 13½ | 15½ | 17¼ | 9½ | 35 | 88¾*a* |
| E. H. Alexander, do R.R. 2 | Amer. Wonder | 12 | 15 | 18¼ | 9¾ | 32½ | 85½*a* |
| Duncan Mitchell, do R.R. 1 | Gold Coin | 10¼ | 12 | 17½ | 9¾ | 33 | 82½ |
| J. Bell, do R.R. 1 | Beauty of Hebron | 12½ | 15½ | 16 | 8¾ | 31 | 81¾*a* |
| J. T. Smith, do R.R. 1 | Gold Coin | 10¾ | 7¼ | 17 | 9¾ | 31½ | 76¼ |
| W. Brimacombe, do R.R. 1 | Blush | 8½ | 6½ | 18 | 9¾ | 33½ | 73¾*a* |
| Wm. Chalmers, do R.R. 1 | Gold Coin | 10¾ | 12¾ | 17½ | 8¾ | 23½ | 73¼ |
| Herman Smith, do | do | 11 | 14¼ | 17 | 9 | 21¼ | 73 |
| Alex Kennedy, do R.R. 1 | Green Mountain | 12¾ | 13 | 12½ | 9¾ | 24¼ | 72¾ |
| Oliver Smith, do R.R. 1 | Gold Coin | 10 | 15 | 12 | 9¼ | 24¼ | 70½ |
| CHRISTIE AGR. SOCIETY. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| Wells Thompson, Orrville | Green Mountain | 14½ | 15 | 18 | 9¾ | 32¼ | 90 |
| Jas. White, do | Great Farmer | 14¼ | 14¾ | 19¾ | 9¼ | 32¼ | 88½*a* |
| W. H. Burns, do | Green Mountain | 14¼ | 7 | 17 | 9¾ | 36½ | 84½ |
| Emerson White, do | do | 13¾ | 8 | 17¾ | 9½ | 34½ | 83½ |
| Earl Jones, Broadbent | do | 9½ | 15 | 18¾ | 8¼ | 30 | 81½ |
| Ed. White, Orrville | do | 13 | 13¼ | 18¾ | 9¾ | 25¼ | 80½ |
| A. R. Thompson, Orrville | do | 13 | 13½ | 18 | 9¾ | 24¼ | 78½ |
| Geo. Culp, do | O. Six | 14 | 15 | 15 | 9¾ | 26¼ | 78*a* |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| PARRY SOUND.—*Continued.* | | [15] | [17] | [20] | [10] | [38] | [100] |
| LORING AGR. SOCIETY. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| J. R. Bain, Loring | Carman No. 1 | 14½ | 15 | 19¾ | 9¾ | 34½ | 93½ |
| Dan. Sinclair, do | Green Mountain | 12¾ | 13½ | 19 | 9 | 34½ | 89 |
| Rich. Yeo, Port Loring | Beauty of Hebron | 13¼ | 12 | 17 | 9¾ | 34 | 84*a* |
| Rudolph Bain, Loring | Carman No. 1 | 14 | 15 | 19¾ | 9¾ | 22¾ | 81½ |
| Jas. Smith, do | Beauty of Hebron | 13½ | 14 | 19½ | 9¾ | 25½ | 80½*a* |
| C. Sims, Sr., do | do | 14½ | 14½ | 18½ | 7 | 27½ | 79¾*a* |
| J. H. Bain, do | Green Mountain | 13¾ | 14 | 19¾ | 8½ | 23½ | 79½ |
| W. Robertson, Spring Creek | Beauty of Hebron | 13 | 13½ | 17 | 9¼ | 20½ | 71*a* |
| MACHAR AGR. SOCIETY. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| Arthur McCoig, South River | Early Ohio | 14½ | 15¾ | 18 | 9¾ | 36½ | 94¾ |
| Jos. Wilson, do | Green Mountain | 12¾ | 16 | 19 | 9¾ | 36 | 93½ |
| And. McKee, do R.R. 1 | do | 14¼ | 15¾ | 18 | 9¾ | 35½ | 93½ |
| Jno. Shom, do | do | 14¼ | 13¼ | 17 | 9¾ | 35½ | 89¾ |
| A. R. Hearn, do | do | 14½ | 14 | 16 | 9 | 36½ | 89½ |
| Jas. Hawthorne, Midford | do | 14¼ | 15 | 17 | 6 | 34½ | 86¾ |
| Wm. Hanson, South River | Ensign | 14 | 15¼ | 19 | 8½ | 29¾ | 84½*a* |
| J. S. Cole, do | Green Mountain | 14¼ | 14½ | 19½ | 8 | 27½ | 84 |
| Hugh A. Boyd, do | Beauty of Hebron | 13¾ | 14¾ | 18¾ | 9¾ | 27 | 81½*a* |
| R. M. Carter, do | Green Mountain | 9 | 15 | 17¾ | 4 | 32 | 78 |
| MAGNETAWAN AGR. SOCIETY. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| A. W. Raaflaub, Magnetawan | Delaware | 14 | 15 | 19½ | 9¾ | 32¾ | 90¾ |
| Jas. Stewart, do | Green Mountain | 13 | 15½ | 18½ | 9¾ | 31¾ | 88½ |
| Amos Keppy, Spence | Beauty of Hebron | 12½ | 13½ | 18¾ | 9¾ | 34½ | 87*a* |
| T. W. Whalley, Magnetawan | Delaware | 10½ | 14¼ | 17¾ | 9½ | 29¾ | 81¾ |
| F. Stewart, do | do | 14 | 15 | 17 | 4 | 28¼ | 78¼ |
| D. F. Jenkins, do | Early White | 7¾ | 14 | 15½ | 9¾ | 28¼ | 73¼*a* |
| S. E. Morris, do | Delaware | 12½ | 15 | 16 | 5 | 24½ | 73 |
| Jas. Barton, do | Green Mountain | 9¾ | 14 | 12 | 9½ | 26¾ | 72 |
| Wm. Veitch, Spence | Beauty of Hebron | 6 | 14¾ | 13½ | 9¾ | 28¼ | 70¼*a* |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| PARRY SOUND.—*Continued.* | | [15] | [17] | [20] | [10] | [38] | [100] |
| McKellar Agr. Society. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| Thos. Moffat, McKellar | Green Mountain | 14¼ | 15¼ | 19¼ | 9¾ | 33 | 91½ |
| Ed. Vowels, do | do | 14¼ | 15½ | 18¼ | 9¾ | 32 | 89¾ |
| W. E. Taylor, do | do | 14¼ | 15¼ | 19¼ | 9¾ | 31 | 89½ |
| J. W. Fenton, do | Rural New Yorker | 13½ | 14¼ | 17¾ | 8 | 35 | 86½*a* |
| R. H. Moffat, do | Delaware | 14¼ | 15 | 19¾ | 5 | 32¼ | 85¾ |
| Hy. Moffat, do | do | 13 | 14¼ | 19¼ | 6¾ | 32¼ | 85½ |
| R. S. Jackson, do | Green Mountain | 13 | 14 | 18 | 9¾ | 30¼ | 85 |
| W. F. Tait, do | Rural New Yorker | 14¼ | 14¾ | 19½ | 5½ | 32 | 84*a* |
| Wm. Watkins, do | Early Northern | 13½ | 15½ | 18 | 6 | 26¼ | 77¼*a* |
| E. Buchner, Hurdville | Green Mountain | 9½ | 15¼ | 12 | 8 | 28½ | 73 |
| Edgar Watkins, McKellar | Irish Cobbler | 11 | 15 | 15¼ | 2 | 29¼ | 72½ |
| Mark Whitmell, do | Beauty of Hebron | 12¼ | 14¼ | 16½ | 9¾ | 21½ | 72¼*a* |
| Albert Moffat, do | Irish Cobbler | 13 | 16 | 17½ | 5½ | 20¼ | 72¼ |
| Perry Agr. Society. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| W. G. Lee, Scotia | Cottle's Beauty | 14 | 15¼ | 18¼ | 9¾ | 32¾ | 88*a* |
| A. Jenkins, Emsdale | Green Mountain | 11¼ | 14½ | 17 | 9¾ | 31¼ | 83¾ |
| H. Tebby, Sr., Fern Glen | Cottle's Beauty | 14½ | 15½ | 18 | 7 | 29 | 82*a* |
| H. T. Tebby, do | do | 12½ | 13¾ | 17½ | 9½ | 28½ | 79¾*a* |
| G. Roberts, Emsdale | do | 9 | 14½ | 18 | 9¾ | 23¼ | 72¾*a* |
| T. E. Rawley, do | do | 10¾ | 12¾ | 16 | 9½ | 25½ | 72½*a* |
| Roy Worsfold, do | do | 12¾ | 12¾ | 16½ | 9¾ | 22 | 71¾*a* |
| H. R. Hayward, Scotia | do | 12 | 12¼ | 17½ | 9¼ | 20½ | 70*a* |
| Powassan Agr. Society. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| Jno. Anderson, Powassan, R.R. 1 | Green Mountain | 14½ | 16 | 19¾ | 10 | 36½ | 96¾ |
| H. J. Paul, do | do | 14½ | 15¼ | 19½ | 9¾ | 36 | 95 |
| L. A. Purdon, do | do | 14½ | 13¾ | 19½ | 9¾ | 35¾ | 93¼ |
| E. J. Purdon, do | do | 14¼ | 14¾ | 19¼ | 9¾ | 34 | 92 |
| J. D. Healey, do | do | 14 | 12¾ | 19½ | 9¾ | 33½ | 89½ |
| W. G. Paul, do | do | 13½ | 14 | 19¼ | 9½ | 33 | 89¼ |
| Jos. Alston, do | do | 14 | 12½ | 19½ | 9¾ | 31½ | 87¼ |
| J. A. Purdon, do | do | 13¾ | 14¾ | 16 | 7¾ | 33¾ | 86 |
| A. R. Ganjion, do | do | 13¾ | 13 | 17 | 9½ | 32 | 85¼ |
| Owen Gough, do R.R. 3 | do | 14½ | 7¾ | 19½ | 6½ | 35 | 83¼ |
| L. Purdon, do | do | 12 | 15 | 17 | 7¾ | 26½ | 78¼ |
| Jas. Oldfield, do | do | 14½ | 12 | 15½ | 6½ | 29¼ | 77¾ |
| W. G. Oldfield, do | do | 13¾ | 12 | 16½ | 9 | 25 | 76¼ |

Note.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| PARRY SOUND.—*Continued.* | | [15] | [17] | [20] | [10] | [38] | [100] |
| STRONG AGR. SOCIETY. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| Jno. Wilson, Sundridge | Green Mountain | 14 | 15½ | 19¾ | 9¾ | 35 | 94 |
| Jno. Paget, do | do | 14½ | 15¾ | 19 | 9¾ | 34¾ | 93¾ |
| Sam. McGirr, do | do | 14 | 14¾ | 17¼ | 9¾ | 33¼ | 89¼ |
| W. H. Adams, do | do | 13 | 14 | 18½ | 9¾ | 33¾ | 89 |
| Jas. Wilson, do | do | 11¾ | 14¾ | 18 | 9¾ | 34¼ | 88½ |
| Jas. Prior, do | do | 10¼ | 15¼ | 18¼ | 8 | 34 | 85¾ |
| Jas. Cook, do | do | 14 | 15¼ | 18½ | 9½ | 27¼ | 84½ |
| J. Willoughby, do | do | 12¼ | 14 | 16 | 9¾ | 30¼ | 82¼ |
| Wm. Duke, do | Early Sunrise | 11¾ | 15 | 17¼ | 9¾ | 29¼ | 81*a* |
| Geo. Frost, do | Green Mountain | 11 | 13¾ | 18 | 8½ | 28¾ | 80 |
| E. H. Butson, do | do | 9 | 14¼ | 14 | 9 | 27¼ | 73½ |
| Earl Basso, do | do | 7½ | 13½ | 15½ | 9 | 27½ | 73 |
| UNITED TPS. AGR. SOCIETY. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| J. H. Whitmell, Dunchurch | Green Mountain | 14 | 14¾ | 19½ | 7¾ | 35¾ | 91¾ |
| Jas. Todd, do | do | 12¾ | 14¾ | 19½ | 9½ | 33 | 89½ |
| Wm. Todd, Maple Island | do | 14¼ | 15¼ | 18½ | 9½ | 30¾ | 88¼ |
| Allan Robertson, Dunchurch | do | 13½ | 14¼ | 18½ | 9¾ | 29½ | 85¼ |
| Jno. Whitmell, do | Beauty of Hebron | 13½ | 15¼ | 18½ | 7¾ | 32 | 85*a* |
| D. R. Macfee, do | Green Mountain | 11 | 14¾ | 19¼ | 9 | 30¼ | 84¼ |
| W. T. Quinn, McKellar | do | 13½ | 14 | 19½ | 9¾ | 27¼ | 84 |
| J. W. Labrach, Maple Island | do | 11 | 13¾ | 16½ | 9¾ | 30½ | 81½ |
| R. Willard, Jr., Dunchurch | do | 12 | 14½ | 15¼ | 9½ | 27½ | 78¾ |
| Jno. Simpson, do | do | 11½ | 13 | 15 | 9½ | 21½ | 70½ |
| RAINY RIVER. | | | | | | | |
| ATWOOD AGR. SOCIETY. | | | | | | | |
| *Judge—R. F. Crossgrove, Sudbury.* | | | | | | | |
| A. Armstrong, Sleeman | Carman No. 1 | 14½ | 15¾ | 19 | 9 | 35½ | 93¾ |
| Carl Peters, Rainy River | Hustler | 14¼ | 15 | 18½ | 10 | 36½ | 92¼*a* |
| D. A. McQuarrie, do | Green Mountain | 14 | 15½ | 18½ | 9 | 35 | 92 |
| O. M. Isberg, Sleeman | Early Ohio | 11 | 15¾ | 15¾ | 8¾ | 35 | 86¼ |
| L. J. Armstrong, do | Russet | 10¼ | 15½ | 17 | 10 | 24 | 74¾*a* |
| F. Gosselin, Rainy River | Irish Cobbler | 14 | 10¾ | 14 | 8¾ | 27 | 74½ |
| Dan Tolten, Sleeman | Green Mountain | 11 | 14½ | 14 | 8¾ | 25¾ | 74 |
| H. J. Hodges, do | do | 10½ | 10 | 17 | 9 | 25 | 71½ |
| G. Byrnes, Rainy River | Irish Cobbler | 11 | 14 | 17 | 8½ | 20 | 70½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| RAINY RIVER.—*Continued.* | | [15] | [17] | [20] | [10] | [38] | [100] |
| RAINY RIVER VALLEY AGR. SOCIETY. | | | | | | | |
| *Judge—R. F. Crossgrove, Sudbury.* | | | | | | | |
| C. H. & H. McCool, Devlin | Irish Cobbler | 13¾ | 15½ | 18½ | 10 | 29¼ | 87 |
| A. J. Leveridge, do | do | 13½ | 14½ | 16 | 10 | 32 | 86 |
| J. L. Ogden, Aylesworth | Wee McGregor | 14 | 15½ | 17 | 9½ | 24 | 77¾*a* |
| C. J. Lindquist, Emo | Comet | 12¼ | 15 | 18 | 10 | 23½ | 76¼ |
| F. W. Tummey, do | Green Mountain | 11 | 14 | 16½ | 9½ | 25 | 76 |
| W. N. Jewell, Big Fork | | 10½ | 15 | 17¼ | 10 | 25 | 75½ |
| Wm. Kingsmill, Aylesworth | Delaware | 11¼ | 15 | 15½ | 10 | 23¼ | 75 |
| SIMCOE. | | | | | | | |
| BARRIE AGR. SOCIETY. | | | | | | | |
| *Judges—E. N. Buckley, Guelph; F. W. Presant, Blenheim.* | | | | | | | |
| A. A. Garvin, Midhurst | Carman No. 1 | 11¼ | 15¼ | 19 | 9¼ | 27½ | 82¼ |
| W. L. Russell, do | do | 12¾ | 15¾ | 18 | 9½ | 25½ | 81½ |
| R. A. Sutherland, Stroud | do | 13¾ | 15¾ | 17 | 9½ | 23½ | 79½ |
| G. S. Spence, Midhurst, R.R. 1 | do | 13 | 15 | 18½ | 9½ | 23 | 79 |
| F. J. Frankcom, do | do | 12 | 13 | 19 | 9½ | 25 | 78½ |
| J. J. Orak, do | do | 13¼ | 15¼ | 17 | 6 | 26½ | 78 |
| R. N. Hickling, Barrie, R.R. 2 | do | 13½ | 10 | 17½ | 9¼ | 26½ | 76¾ |
| Fred Carson, do | do | 10¾ | 15½ | 18½ | 9¼ | 21 | 75 |
| G. D. Coutts, Midhurst | Beauty of Hebron | 11¼ | 14¼ | 16 | 9¼ | 24½ | 73¼*a* |
| C. Hodges, Edgar | Carman No. 1 | 12 | 14½ | 14½ | 9¼ | 21½ | 71¾ |
| TEMISKAMING. | | | | | | | |
| CHARLTON AGR. SOCIETY. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| Roland Attwater, Charlton | Irish Cobbler | 14¼ | 16 | 19¾ | 10 | 28¾ | 88¾ |
| F. Pummell, do | do | 14 | 15¼ | 19¾ | 10 | 25½ | 84½ |
| B. Nickerson, do | Dooley | 14½ | 15¼ | 18¾ | 9¾ | 25 | 83¼ |
| Michael Whalen, Costello | Irish Cobbler | 13 | 14½ | 19 | 8 | 28½ | 83 |
| Alex. McFarlane, Charlton | do | 13½ | 14¾ | 19 | 9¾ | 21½ | 78½ |
| Jno. McFarlane, do | do | 12 | 14 | 19 | 9¾ | 20½ | 75¼ |
| S. Rodgers, do | Green Mountain | 11 | 13¾ | 19 | 8½ | 22¾ | 75 |
| H. W. Netherton, Brentha | Irish Cobbler | 11½ | 14¼ | 19½ | 6 | 23½ | 74¾ |
| H. T. Kenny, Charlton | Gold Coin | 10¼ | 15½ | 19¾ | 9¾ | 19¼ | 74½ |
| Basil Bailey, do | Early Ohio | 12¾ | 14½ | 17½ | 9¾ | 15½ | 70 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| TEMISKAMING.—*Continued* | | [15] | [17] | [20] | [10] | [38] | [100] |
| COCHRANE AGR. SOCIETY. | | | | | | | |
| *Judges—G. C. Chamberlain, Ottawa; H. E. Cooke, Cataraqui.* | | | | | | | |
| T. F. Travis, Cochrane | Beauty of Hebron | 11 | 16 | 14 | 9 | 26¼ | 84½*a* |
| J. T. Hale, do | Green Mountain | 13 | 13 | 18½ | 6½ | 33 | 84 |
| P. H. Ouimet, do | Early Rose | 10 | 15½ | 15½ | 7 | 31 | 77*a* |
| A Pinion, do | Green Mountain | 10½ | 15½ | 16 | 5½ | 26½ | 74 |
| A. Hewson, do | Irish Cobbler | 10½ | 15½ | 14 | 8 | 25 | 73 |
| Oscar Sigouin, do | Green Mountain | 10½ | 14 | 17 | 8 | 22¼ | 71¾ |
| R. Foster, Clute | Irish Cobbler | 12 | 14 | 17 | 7½ | 21 | 71½ |
| Jno. Sarney, Cochrane | do | 11½ | 13 | 16½ | 4½ | 24¾ | 70¼ |
| ENGLEHART AGR. SOCIETY. | | | | | | | |
| *Judge—H. E. Cooke, Cataraqui.* | | | | | | | |
| A. Harkness, Englehart | Gold Coin | 13¾ | 14 | 18 | 9¾ | 34¼ | 89¾ |
| Jno. Allen, Heaslip | Snowflake | 14¼ | 15½ | 19½ | 9¼ | 29¾ | 86¾*a* |
| Jas. Harman, do | Irish Cobbler | 13½ | 14¾ | 19¼ | 9¾ | 28¾ | 86 |
| F. Corley, Englehart | Gold Coin | 12¼ | 14 | 18 | 8 | 30¼ | 83½ |
| T. J. Sword, Heaslip | Delaware | 13¼ | 15 | 16 | 9¾ | 26½ | 80½ |
| E. Winlaw, Englehart | Green Mountain | 13 | 13½ | 14 | 9½ | 29 | 79 |
| A. W. Skinner, do | do | 11½ | 15 | 19 | 9¾ | 23½ | 78½ |
| Geo. Harman, Heaslip | Irish Cobbler | 14 | 14¼ | 18¼ | 9¼ | 21½ | 78¼ |
| Mrs. E. Smith, Englehart | Gold Coin | 12¾ | 14¾ | 19½ | 9½ | 20 | 76½ |
| L. T. Brown, do | do | 12½ | 13¾ | 18¼ | 9¼ | 21 | 75¼ |
| H. Anyan, do | Irish Cobbler | 12½ | 14 | 18½ | 9¾ | 18¼ | 73 |
| R. H. Emrick, Heaslip | do | 11¾ | 14½ | 15 | 9¾ | 21¼ | 72¼ |
| W. Anyan, Englehart | Gold Coin | 11¼ | 13¾ | 17 | 9¾ | 19 | 70¾ |
| THUNDER BAY. | | | | | | | |
| OLIVER AGR. SOCIETY. | | | | | | | |
| *Judge—E. N. Buckley, Guelph.* | | | | | | | |
| R. J. Martyn, Murillo | Carman No. 1 | 14½ | 16¼ | 19¼ | 9¾ | 36¾ | 96½ |
| C. Scott, do | do | 13¾ | 16¾ | 19¼ | 9½ | 36¾ | 96 |
| Walker McNally, do | do | 14 | 15¾ | 17¾ | 9½ | 36 | 93 |
| Wm. Reid, do | do | 13¾ | 16¾ | 18¼ | 9½ | 34½ | 92¾ |
| Geo. Munroe, do | do | 14 | 16¼ | 18 | 9½ | 34¾ | 92½ |
| A. Nordland, do | do | 14¼ | 16½ | 19½ | 9½ | 31¼ | 91½ |
| Roy Bingham, do | do | 11¾ | 15½ | 17¼ | 9½ | 37¼ | 91¼ |
| Harvey McNally, do | do | 13¾ | 15¾ | 18½ | 9½ | 33½ | 91 |
| R. R. Everitt, do | Green Mountain | 13½ | 16¼ | 18¾ | 8¾ | 33½ | 90¾ |
| Jno. McDonald, do | Carman No. 1 | 14¼ | 15¾ | 18¼ | 9½ | 32¼ | 90½ |
| Sam McNally, do | do | 12½ | 16¼ | 17¼ | 9½ | 34¾ | 90¼ |
| Frank Cook, do | do | 14 | 16¼ | 18½ | 8½ | 31¼ | 89 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| THUNDER BAY.—*Continued.* | | [15] | [17] | [20] | [10] | [38] | [100] |
| OLIVER AGR. SOCIETY.—*Con.* | | | | | | | |
| W. W. Fenton, do | Carman No. 1 | 12 | 15¾ | 14¾ | 9½ | 36¾ | 88¾ |
| C. H. McNally, do | Irish Cobbler | 12 | 16¾ | 16¼ | 9½ | 34¼ | 88¾ |
| Jos. Stevenson, do | do | 13 | 16¾ | 17¾ | 9½ | 31¼ | 88¼ |
| Thos. Zelland, do | do | 14 | 14¼ | 17¾ | 9½ | 32¼ | 87¾ |
| Thos. Fawcett, Millar | Carman No. 1 | 11¾ | 14¼ | 18¾ | 9½ | 32½ | 86¾ |
| Wm. Sim, Murillo | do | 10¾ | 15¼ | 16¼ | 9½ | 34½ | 86¼ |
| K. McDonald, do | do | 11 | 16¼ | 16¾ | 9½ | 31¾ | 85¼ |
| A. Felker, do | do | 11½ | 16¼ | 19¼ | 9½ | 28 | 84½ |
| J. W. Fenton, do | do | 12¼ | 15½ | 15 | 9½ | 31¾ | 84 |
| E. E. Thomas, Intola | do | 12¾ | 16½ | 16¼ | 9½ | 27½ | 82½ |
| Marshall Hennessey, Millar | do | 12½ | 15¾ | 18¾ | 8¾ | 26½ | 82½ |
| Ross McKenzie, Murillo | do | 13¾ | 16¼ | 18¾ | 9¼ | 24 | 82¼ |
| Hy. Carter, do | do | 9¼ | 15 | 16½ | 9½ | 31½ | 81¾ |
| R. B. Martyn, do | Irish Cobbler | 12¾ | 15¾ | 15¼ | 8¼ | 28½ | 81 |
| C. B. Hill, do | Green Mountain | 12¾ | 15¼ | 17¼ | 8½ | 27 | 80¾ |
| Albert Gorton, do | Carman No 1 | 8¾ | 15¾ | 16¼ | 9½ | 30 | 80¼ |
| Harvey Gorton, do | Six Weeks | 9¼ | 15¼ | 17¼ | 9½ | 29½ | 78½*a* |
| T. Kellow, do | Carman No. 1 | 9¼ | 15½ | 16½ | 9½ | 26½ | 77 |
| Jos. Hughes, do | Irish Cobbler | 11 | 14¼ | 17¼ | 9¼ | 25 | 76¾ |
| Norman McNally, do | do | 9¼ | 15¾ | 15 | 8½ | 27¾ | 76¼ |
| WHITEFISH VALLEY AGR. SOCIETY. *Judge—E. N. Buckley, Guelph.* | | | | | | | |
| Fred Sitch, Hymers | Carman No. 1 | 14 | 15¾ | 18¾ | 9½ | 35¾ | 93¾ |
| Thos. Scott, do | Green Mountain | 14 | 15¾ | 16¾ | 9½ | 36½ | 92¼ |
| Jas. Thatcher, do | Manitoba Beauty | 14½ | 16½ | 18¾ | 9½ | 34¼ | 91½*a* |
| Hy. Hansen, do | Irish Cobbler | 13½ | 16½ | 18¾ | 9½ | 33 | 91¼ |
| W. C. Grant, O'Connor | Carman No. 3 | 12¼ | 14¼ | 18¾ | 8¾ | 35¼ | 87¼*a* |
| P. Tesolin, Hymers | do 1 | 13½ | 16¼ | 18¼ | 9½ | 27¼ | 84¾ |
| A. Parker, do | do 1 | 13½ | 16¼ | 18¼ | 9½ | 26 | 83½ |
| Hy. Wheal, do | White Rose | 10½ | 13½ | 17¼ | 9½ | 34½ | 83¼ |
| Ben Sutherland, do | Manitoba Beauty | 12¼ | 15½ | 18½ | 9¾ | 27¾ | 81¾*a* |
| C. D. Blaikie, do | Irish Cobbler | 12¼ | 14½ | 15¾ | 9¼ | 26¼ | 78½ |
| Fred Sharp, do | do | 11¾ | 14¾ | 18½ | 9½ | 22¾ | 77¾ |
| A. G. Forrest, do | do | 9¾ | 13½ | 17¼ | 9½ | 25½ | 75½ |
| H. P. Sisson, do | do | 11¼ | 15½ | 18½ | 8½ | 20½ | 74¾ |
| T. Thatcher, do | Green Mountain | 10 | 12¾ | 15¼ | 5½ | 32½ | 73¾ |
| Robt. Vance, Flint | Carman No. 3 | 8½ | 14¼ | 17¾ | 7½ | 26½ | 72½*a* |
| T. Smallwell, Hymers | Davies Warrior | 9¾ | 15 | 14¼ | 7¼ | 25¾ | 72 |
| Mike Kolibik, do | Carman No. 1 | 11 | 13½ | 18½ | 8½ | 18½ | 70 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | *General appearance. | Freedom from blight and insects. | Method and thoroughness of cultivation. | Purity of variety. | †Apparent yield. | Totals of scores. |
|---|---|---|---|---|---|---|---|
| WELLINGTON | | [15] | [17] | [20] | [10] | [38] | [100] |
| ERIN AGR. SOCIETY. | | | | | | | |
| *Judges—G. C. Chamberlain, Ottawa; A. G. Richmond, Perth.* | | | | | | | |
| Jas. McKitrick, Erin | Green Mountain | 13½ | 14½ | 19 | 10 | 35 | 92 |
| R. D. Nodwell, Hillsburg | Irish Cobbler | 13 | 16½ | 19½ | 10 | 31 | 90 |
| S. W. Bingham & Sons, Hillsburg, R.R. 2 | Green Mountain | 12½ | 14 | 19½ | 9 | 34 | 89 |
| S.E. Griffin & Son, Acton, R.R.2 | Dooley | 13 | 15½ | 19 | 9 | 31½ | 88 |
| F. McMillan, Hillsburg | Green Mountain | 11½ | 16 | 18½ | 8½ | 32½ | 87 |
| Geo. Overland, Orton, R.R. 3 | do | 12½ | 14½ | 16 | 10 | 33 | 86 |
| J. L. Overland, Erin, R.R. 1 | do | 13½ | 15 | 18 | 10 | 28½ | 85 |
| M. Leitch, Guelph, R.R. 1 | do | 11½ | 15 | 18 | 9½ | 29½ | 83½ |
| Geo. Wheeler & Son, Orton, R.R. 3 | do | 11½ | 14½ | 18 | 9½ | 29½ | 83 |
| McFee Bros., Erin, R.R. 1 | do | 14 | 15½ | 19 | 9½ | 24½ | 82½ |
| Jas. Milloy, do | do | 11 | 14 | 18½ | 7 | 30½ | 81 |
| H. L. Matheson, Hillsburg, R.R. 2 | Dooley | 12 | 15½ | 15 | 10 | 28 | 80½ |
| E. Barbour, do R.R. 2 | Green Mountain | 13 | 15½ | 19 | 9 | 23½ | 80 |
| M. Graham, do R.R. 1 | do | 13 | 15 | 16 | 8 | 25½ | 77½ |
| D. S. Sinclair, Erin | do | 12½ | 14 | 17 | 9 | 22½ | 75 |
| WENTWORTH | | | | | | | |
| ANCASTER AGR. SOCIETY. | | | | | | | |
| *Judge—A. G. Richmond, Perth.* | | | | | | | |
| W. H. English, Ancaster, R.R. 1 | Noxall | 14 | 15 | 19 | 8½ | 32½ | 87*a* |
| Jno. Pickard, do | Imp. Derby | 13½ | 15½ | 19 | 9½ | 30 | 85½*a* |
| Ed. Lyons, do R.R. 1 | Comet | 13 | 14 | 18½ | 9½ | 31 | 84*a* |
| Jno. McNiven, do R.R. 2 | Dooley | 13½ | 15 | 18 | 7 | 30 | 83½ |
| N. W. Shaver, do R.R. 1 | do | 13½ | 15½ | 19 | 9½ | 24½ | 82 |
| Chas. Ruse, do R.R. 1 | Comet | 13½ | 14 | 19 | 9 | 28 | 81½*a* |
| Jas. Oakes, do R.R. 2 | Green Mountain | 12 | 14 | 19½ | 7 | 28 | 80½ |
| J. T. English, do | Noxall | 11 | 15 | 18 | 8½ | 26½ | 77*a* |
| G. M. Brown, Jerseyville, R.R. 1 | Green Mountain | 13½ | 15½ | 19½ | 9½ | 15 | 73 |
| YORK | | | | | | | |
| RICHMOND HILL AGR. SOCIETY. | | | | | | | |
| *Judges—H. E. Cooke, Cataraqui; F. W. Presant, Blenheim.* | | | | | | | |
| M. McQuarrie, Maple, R.R. 1 | Spencer | 13 | 14¾ | 17 | 10 | 27½ | 80¼*a* |
| Wm. Woods, do R.R. 2 | do | 13½ | 15½ | 18½ | 9 | 25 | 79½*a* |
| T. G. Clark, do R.R. 1 | Green Mountain | 12¾ | 14 | 17½ | 9¾ | 24½ | 78½ |
| Wm. J. Oliver, do R.R. 1 | Irish Cobbler | 14 | 15¾ | 17 | 9¾ | 19½ | 76 |
| Geo. Crooks, do R.R. 1 | Dooley | 12 | 14 | 19 | 6½ | 19½ | 71 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### MANGELS.

| Competitors in Order of Merit. | Straightness of rows. | Method of seeding. | Proper thinning and cleaning. | Thoroughness of cultivation. | Freedom from insects and diseases. | Purity and uniformity of roots. | Shape and quality of roots. | Yield of roots per acre. | Totals of scores. |
|---|---|---|---|---|---|---|---|---|---|
| DURHAM. | [5] | [5] | [10] | [10] | [10] | [10] | [15] | [35] | [100] |
| PORT HOPE AGR. SOCIETY. | | | | | | | | | |
| *Judge—H. E. Redner, Rednersville.* | | | | | | | | | |
| Ernest Austin, Hope | 4 | 4 | 9 | 9 | 9 | 9 | 13 | 30 | 87 |
| W. J. Crowhurst, Port Hope | 4 | 4 | 9 | 9 | 9 | 8 | 14 | 29½ | 86½ |
| Stanley Bickle, do | 4 | 4 | 8 | 9 | 9 | 9 | 14 | 29 | 86 |
| M. Dickinson, do | 4 | 5 | 9½ | 8 | 9 | 8½ | 13 | 28 | 85 |
| G. H. Martin, do | 4 | 3 | 8½ | 7 | 8 | 8 | 12 | 27 | 77½ |
| L. M. Clarke, do | 4 | 4 | 7 | 7 | 9 | 8 | 12 | 26 | 77 |
| Geo. Parsons, do | 4½ | 3½ | 7½ | 6 | 9 | 8 | 13 | 25 | 76½ |
| A. E. Meadows, do | 4½ | 3½ | 7½ | 6 | 9 | 8½ | 12 | 25 | 76 |
| WEST DURHAM AGR. SOCIETY. | | | | | | | | | |
| *Judge—H. E. Redner, Rednersville.* | | | | | | | | | |
| J. F. Osborne, Newcastle | 4½ | 4½ | 9½ | 9½ | 9½ | 9 | 14 | 31½ | 92 |
| R. E. Osborne, Bowmanville | 4 | 4½ | 9 | 10 | 9½ | 9 | 13 | 31 | 90 |
| A. Ayre, Hampton | 4½ | 4½ | 9½ | 9½ | 10 | 8 | 13½ | 30 | 89½ |
| F. Allen & Son, Newcastle | 4½ | 4½ | 9½ | 8 | 9½ | 9 | 14 | 29½ | 88½ |
| G.F. Annis, Bowmanville, R.R.2 | 4½ | 4½ | 9¼ | 9½ | 9 | 13 | 29 | 88¼ | |
| Arthur Pascoe, Hampton | 3½ | 4 | 9½ | 9½ | 9 | 9½ | 14 | 28 | 87 |
| C. Cox, Bowmanville | 4 | 4 | 9 | 9½ | 9½ | 9 | 13 | 25½ | 83½ |
| H. S. Barrie, do | 4½ | 4½ | 8 | 7½ | 9 | 9½ | 12½ | 27¾ | 83¼ |
| T. Baker, Hampton | 4 | 4 | 8½ | 8½ | 8 | 8½ | 13½ | 27¼ | 82¾ |
| A. W. Annis, Tyrone | 4 | 4 | 9 | 7½ | 9½ | 8 | 13 | 27½ | 82½ |
| R. J. Gill, Bowmanville | 4 | 4 | 8 | 7 | 9 | 8½ | 13 | 27¼ | 81¼ |
| M. J. Elliott, do | 4 | 4 | 8 | 7 | 9 | 9¼ | 12 | 25 | 78¼ |
| Allen Campbell, do | 3½ | 4 | 8½ | 7 | 9 | 7½ | 12 | 25 | 76½ |
| GREY. | | | | | | | | | |
| KEPPEL AGR. SOCIETY. | | | | | | | | | |
| *Judge—Archie Greer, Mansfield.* | | | | | | | | | |
| Geo. McKenzie, Kemble, R.R.1 | 4½ | 4½ | 9 | 9 | 9 | 8½ | 12 | 30 | 86½ |
| Sam Perkins, do | 4½ | 5 | 10 | 9 | 8 | 8 | 12 | 25 | 81½ |
| Thos. Johnston, do | 4 | 3½ | 7 | 10 | 8 | 8 | 12 | 28 | 80½ |
| Jno. Taylor, do | 4 | 4 | 8 | 9 | 8 | 8 | 13 | 25 | 79 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### MANGELS.

| Competitors in Order of Merit. | Straightness of rows. | Method of seeding. | Proper thinning and cleaning. | Thoroughness of cultivation. | Freedom from insects and diseases. | Purity and uniformity of roots. | Shape and quality of roots. | Yield of roots per acre. | Totals of scores. |
|---|---|---|---|---|---|---|---|---|---|
| YORK. | [5] | [5] | [10] | [10] | [10] | [10] | [15] | [35] | [100] |
| SCARBORO AGR. SOCIETY. | | | | | | | | | |
| *Judge—D. English, Burketon.* | | | | | | | | | |
| J. Routcliffe, Scarboro Jct..... | 5 | 5 | 9 | 10 | 10 | 10 | 14 | 32 | 95 |
| W. G. Rennie, Agincourt..... | 5 | 5 | 9 | 9 | 10 | 9 | 13 | 33 | 93 |
| W. L. Clark, do ..... | 4½ | 5 | 9 | 8 | 10 | 9 | 13 | 33 | 91½ |
| W. White, Scarboro Jct., R.R. 1 | 4½ | 5 | 9 | 9 | 9 | 10 | 13 | 30 | 89½ |
| J. M. T. Weir, Agincourt..... | 4½ | 5 | 10 | 9 | 9 | 9 | 12 | 30 | 88½ |
| Jas. Scott, do R.R. 1 | 5 | 5 | 7 | 10 | 10 | 9 | 12 | 30 | 88 |
| Allan Murray, do ..... | 4 | 5 | 8 | 8 | 10 | 8 | 13 | 30 | 86 |
| Wm. Hope, Milliken ..... | 4 | 5 | 8½ | 10 | 10 | 8 | 11 | 29 | 85½ |
| S. Rattle, do ..... | 4 | 5 | 8 | 8 | 10 | 8 | 12 | 30 | 85 |
| W. A. Paterson, Agincourt.... | 4½ | 4½ | 9 | 9 | 9 | 8½ | 10 | 30 | 84½ |
| W. Latham, Scarboro Jct..... | 4½ | 4½ | 8 | 10 | 10 | 8 | 11 | 28 | 84 |
| F. Yeomans, Agincourt..... | 4½ | 5 | 9 | 9 | 10 | 9 | 10 | 27 | 83½ |
| Edgar Herron, do ..... | 5 | 4 | 9 | 9 | 8 | 8 | 10 | 30 | 83 |
| G. Paterson, do ..... | 4 | 5 | 8 | 8 | 10 | 8 | 12 | 28 | 83 |
| W. Walton, do ..... | 5 | 4 | 8 | 8 | 9 | 8 | 12 | 28 | 82 |
| W. Loveless, Scarboro Jct..... | 4 | 4 | 8 | 9 | 9 | 8 | 11 | 28 | 81 |
| D. Crawford, Agincourt..... | 4 | 4 | 6 | 8 | 8 | 8 | 12 | 28 | 78 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### TURNIPS.

| Competitors in Order of Merit. | Straightness of rows. | Method of seeding. | Proper thinning and cleaning. | Thoroughness of cultivation. | Freedom from insects and diseases. | Purity and uniformity of roots. | Shape and quality of roots. | Yield of roots per acre. | Totals of scores. |
|---|---|---|---|---|---|---|---|---|---|
| BRANT. | [5] | [5] | [10] | [10] | [10] | [10] | [15] | [35] | [100] |
| PARIS AGR. SOCIETY. | | | | | | | | | |
| *Judge—D. McClure, Toronto.* | | | | | | | | | |
| Allan Edgar, Paris, R.R. 5 | 5 | 4 | 9 | 9 | 9 | 8½ | 14 | 33 | 91½ |
| Jos. Martin, do R.R. 3 | 5 | 4 | 9 | 9 | 9 | 8½ | 13½ | 32 | 90 |
| Haas Bros., do R.R. 2 | 4½ | 4 | 8½ | 8½ | 8 | 8½ | 14 | 32 | 88 |
| O'Neail Bros., do R.R. 2 | 5 | 4 | 8 | 9 | 8½ | 9 | 13 | 31 | 87½ |
| J. H. McGill, Princeton | 4 | 3½ | 8 | 8½ | 9 | 9 | 13 | 32 | 87 |
| W. Parnell, Richwood | 4 | 3½ | 7 | 7 | 9 | 9 | 12½ | 33 | 85 |
| W. D. Barker, Paris, R.R. 2 | 3½ | 3½ | 8½ | 8½ | 7 | 8 | 13 | 30 | 82 |
| R. J. McCormick, do R.R. 4 | 4 | 3½ | 8 | 8 | 8 | 8 | 12 | 30 | 81½ |
| D. Patton, Paris Station | 4 | 3½ | 7 | 9 | 8 | 8½ | 13 | 28 | 81 |
| M. McAllister, Paris, R.R. 3 | 3 | 3½ | 7½ | 9 | 8 | 8½ | 13 | 27½ | 80 |
| J. R. Moyle, do R.R. 2 | 3½ | 3½ | 7 | 9 | 8 | 9 | 12 | 27 | 79 |
| E. Daniels, Princeton | 4 | 3½ | 7 | 7 | 8 | 9 | 12 | 28 | 78½ |
| Jno. Cochrane, Paris, R.R. 2 | 3½ | 3½ | 7 | 8 | 8 | 8½ | 12 | 27½ | 78 |
| Wesley Potruff, do R.R. 3 | 4 | 3½ | 7 | 8 | 8 | 7 | 12 | 28 | 77½ |
| Fred. Luck, do R.R. 4 | 3½ | 3½ | 7 | 8 | 8 | 9 | 12 | 26 | 77 |
| W. Webber, do R.R. 2 | 3½ | 3½ | 8 | 8½ | 8 | 8 | 12 | 25 | 76½ |
| D. O'Riley, do R.R. 3 | 3½ | 3½ | 7 | 7 | 8 | 8 | 12 | 27 | 76 |
| R. Faskin, do R.R. 3 | 3½ | 3½ | 8 | 7 | 7 | 8 | 12 | 26½ | 75½ |
| Geo. Bone, do R.R. 3 | 3½ | 3½ | 7 | 7 | 8 | 8 | 12 | 26 | 75 |
| Clarence Lee, do R.R. 2 | 4 | 3½ | 7 | 8 | 8 | 8 | 12 | 24 | 74½ |
| Jno. Doyle, Paris Sta | 3½ | 3½ | 7 | 7 | 8 | 8 | 12 | 25 | 74 |
| Chas. Buck, Paris, R.R. 2 | 4 | 3½ | 7 | 8 | 8 | 7 | 12 | 24 | 73½ |
| Wylie Guthrie, do | 3 | 3 | 7 | 8 | 8 | 8 | 11 | 25 | 73 |
| D. A. Holmes, do | 4 | 3 | 7 | 7 | 7 | 8 | 10 | 26 | 72 |
| Anthony Deans, do | 3½ | 3½ | 7 | 8 | 7 | 8 | 10 | 24 | 71 |
| Albert Gilbert, do | 3 | 3 | 7 | 7 | 8 | 8 | 11 | 23 | 70 |
| GREY. | | | | | | | | | |
| PRICEVILLE AGR. SOCIETY. | | | | | | | | | |
| *Judge—Jas. Boyd, Markham.* | | | | | | | | | |
| Wm. Burnett, Priceville | 4 | 3½ | 8 | 7 | 8 | 7 | 14 | 28 | 79½ |
| D. MacMillan, do | 3 | 3½ | 7½ | 8 | 8½ | 9 | 13 | 26 | 78½ |
| Jno. Burnett, do | 3 | 3 | 7 | 7 | 8 | 9 | 14 | 26 | 77 |
| L. A. Fisher, do R.R. 2 | 3½ | 4 | 8 | 9 | 9 | 6 | 12 | 25 | 76½ |
| Malcolm McLean, do | 4 | 2½ | 6½ | 7 | 9 | 7½ | 14 | 25 | 74½ |
| Colin McLean, do | 2½ | 3 | 7 | 7 | 8 | 8 | 13 | 25 | 74 |
| David Nichol, do | 4 | 4 | 6½ | 8 | 8 | 7 | 12 | 24 | 73½ |
| H. R. McLean, do R.R. 2 | 3½ | 3½ | 8 | 7 | 9 | 7 | 12 | 23 | 73 |
| Louis Frook, do | 4 | 4 | 6 | 6½ | 8 | 7 | 12 | 25 | 72½ |
| Jno.D. McLeod, Ceylon, R.R. 1 | 3 | 3 | 7 | 6 | 7½ | 8½ | 13 | 24 | 72 |
| Geo. Black, Proton Sta., R.R. 1 | 4 | 3½ | 6 | 6½ | 8 | 6½ | 13 | 24 | 71½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### TURNIPS.

| Competitors in Order of Merit. | Straightness of rows. | Method of seeding. | Proper thinning and cleaning. | Thoroughness of cultivation. | Freedom from insects and diseases. | Purity and uniformity of roots. | Shape and quality of roots. | Yield of roots per acre. | Totals of scores. |
|---|---|---|---|---|---|---|---|---|---|
| GREY.—*Continued.* | [5] | [5] | [10] | [10] | [10] | [10] | [15] | [35] | [100] |
| PROTON AGR. SOCIETY. | | | | | | | | | |
| *Judge—Archie Greer, Mansfield, R.R. 1.* | | | | | | | | | |
| Geo. Bell, Dundalk, R.R. 4 | 4½ | 4½ | 9 | 8 | 9 | 9 | 12 | 28 | 84 |
| Jno. McQuarrie, do R.R. 2 | 4 | 4½ | 8 | 9 | 8 | 9 | 12 | 25 | 79½ |
| Robt. Kimell, Hopeville, R.R. 1 | 4 | 4½ | 9 | 9 | 8 | 8 | 12 | 24 | 78½ |
| Walter Middleton, Dundalk | 4½ | 3½ | 8 | 9 | 8 | 8 | 12 | 25 | 78 |
| R. N. Fowler & Sons, Dundalk, R.R. 1 | 4 | 4½ | 8 | 8 | 7 | 8 | 12 | 26 | 77½ |
| Amos Clark & Sons, do R.R. 2 | 3½ | 3½ | 8 | 7 | 8 | 9 | 12 | 25 | 76 |
| Ernest Bell, do R.R. 4 | 4 | 3½ | 8 | 9 | 7 | 8 | 12 | 23 | 74½ |
| PARRY SOUND. | | | | | | | | | |
| McMURRICH AGR. SOCIETY. | | | | | | | | | |
| *Judge—H. L. Goltz, Bardsville.* | | | | | | | | | |
| C. & J. Stewart, Burk's Falls, R.R. 7 | 4 | 4 | 8 | 9½ | 9½ | 8 | 13 | 28 | 84 |
| P. J. Farrell, Sprucedale | 4 | 4 | 8½ | 9 | 9 | 7 | 13 | 29 | 83½ |
| W. E. Pearce, do | 4½ | 4½ | 9 | 9 | 9 | 7 | 11 | 27 | 81 |
| Fletcher Walker, Royston | 4½ | 4½ | 8½ | 9 | 9 | 7 | 11 | 26½ | 80 |
| Hy. Watson, Sprucedale | 4 | 4 | 8½ | 8½ | 9 | 7 | 11 | 26 | 78 |
| J. H. Kilby, McMurrich | 4 | 3½ | 8 | 7 | 9 | 7 | 10 | 24 | 72½ |
| Jas. Downes, Sprucedale | 2 | 3 | 6 | 5 | 9 | 8 | 12 | 26 | 71 |
| WELLINGTON. | | | | | | | | | |
| MT. FOREST AGR. SOCIETY. | | | | | | | | | |
| *Judge—Jas. Boyd, Markham.* | | | | | | | | | |
| Jno. Caulfield, Mt. Forest, R.R. 2 | 3½ | 4 | 9 | 9 | 8 | 8½ | 14 | 30 | 86 |
| Jno. D. Ross, do R.R. 1 | 4 | 3 | 9 | 9½ | 9½ | 9 | 14 | 27 | 85 |
| Marshall Wright, do | 3½ | 3½ | 8 | 7½ | 9 | 9 | 14 | 30 | 84½ |
| Donald M'Queen, do | 3½ | 4 | 9 | 8 | 9 | 9 | 12 | 26 | 80½ |
| Irwin Robb, do R.R. 2 | 3½ | 4 | 8 | 7½ | 9 | 8 | 13 | 26 | 79 |
| Wm. Duncan, Conn | 4 | 3 | 7 | 8 | 9 | 7½ | 13 | 26 | 77½ |
| Thos. Dingwall, Holstein | 3½ | 3½ | 7½ | 8 | 9 | 8½ | 12 | 25 | 77 |
| Geo. Crow, Clifford, R.R. 3 | 4 | 3 | 8 | 8½ | 9 | 7 | 13 | 22 | 74½ |
| Anson Kirkness, Mt. Forest | 4 | 3 | 8 | 7 | 9 | 9 | 11 | 21½ | 72½ |
| Jno. Ghent, do R.R. 5 | 4 | 3 | 7½ | 8 | 9 | 6 | 11 | 24 | 72½ |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### TURNIPS.

| Competitors in Order of Merit. | Straightness of rows. | Method of seeding. | Proper thinning and cleaning. | Thoroughness of cultivation. | Freedom from insects and diseases. | Purity and uniformity of roots. | Shape and quality of roots. | Yield of roots per acre. | Totals of scores. |
|---|---|---|---|---|---|---|---|---|---|
| WELLINGTON.—*Continued.* | [5] | [5] | [10] | [10] | [10] | [10] | [15] | [35] | [100] |
| ROCKWOOD AGR. SOCIETY. | | | | | | | | | |
| *Judge—W. F. B. Switzer, Streetsville.* | | | | | | | | | |
| J. Stovel, Rockwood, R.R. 1.. | 4 | 4 | 9 | 9 | 8 | 8 | 12 | 33 | 87 |
| Thomson Stewart, Guelph, R.R. 1 | 5 | 4 | 9 | 8 | 8 | 8 | 13 | 31½ | 86½ |
| A. F. Auld, do R.R. 2 | 5 | 5 | 8 | 9 | 8 | 8 | 13 | 30 | 86 |
| A. McNabb, Rockwood, R.R.4 | 5 | 5 | 9 | 8 | 8 | 9 | 13 | 28½ | 85½ |
| Fred Langdon, Guelph, R.R. 1 | 5 | 4 | 8 | 8 | 8 | 9 | 12 | 31 | 85 |
| Robt. Tuck, Campbellville, R.R. 1 | 5 | 5 | 8 | 8 | 8 | 8 | 12 | 30½ | 84½ |
| T. Gilfillan, Guelph, R.R. 2... | 5 | 4 | 8 | 8 | 8 | 8 | 12 | 31 | 84 |
| Jos. Gahan, Rockwood, R.R. 1 | 5 | 4 | 9 | 8 | 8 | 8 | 12 | 29½ | 83½ |
| W. D. Gray, do R.R. 1 | 4 | 4 | 7 | 9 | 8 | 9 | 12 | 30 | 83 |
| W. McNabb, do R.R. 4 | 5 | 4 | 8 | 8 | 8 | 8 | 13 | 29 | 83 |
| H. S. Hasking, do R.R. 2 | 5 | 5 | 8 | 8 | 8 | 8 | 13 | 28 | 83 |
| Lorne Allan, do R.R. 1 | 5 | 4 | 9 | 9 | 8 | 8 | 12 | 28 | 83 |
| D. A. McMillan, Guelph, R.R. 1 | 5 | 4 | 8 | 8 | 8 | 8 | 12 | 29½ | 82½ |
| S. McLean, Rockwood, R.R. 4 | 4 | 4 | 7 | 8 | 8 | 8 | 12 | 31½ | 82½ |
| Jno. J. Cummins, do R.R. 3 | 5 | 5 | 9 | 9 | 8 | 8 | 12 | 26½ | 82½ |
| Gerald Kean, Guelph, R.R. 2.. | 5 | 4 | 8 | 8 | 8 | 9 | 13 | 27½ | 82½ |
| T. G. Hutchinson, Rockwood, R.R. 1 | 5 | 4 | 8 | 8 | 8 | 8 | 12 | 29 | 82 |
| L. McDougall & Sons, Rockwood, R.R. 5 | 5 | 5 | 8 | 8 | 8 | 8 | 13 | 27 | 82 |
| F. Day, do R.R. 4 | 5 | 4 | 7 | 8 | 8 | 7 | 12 | 31 | 82 |
| C. Benham, do R.R. 5 | 5 | 4 | 8 | 8 | 8 | 9 | 12 | 28 | 82 |
| M. E. Burns, do R.R. 4 | 5 | 4 | 8 | 8 | 8 | 8 | 12 | 28½ | 81½ |
| Geo. Sockett, Guelph, R.R. 1.. | 5 | 5 | 8 | 8 | 8 | 8 | 12 | 27½ | 81½ |
| Wm. Gordon, Rockwood, R.R. 2 | 4 | 4 | 8 | 8 | 8 | 8 | 12 | 29½ | 81½ |
| Hy. Benham, do R.R. 5 | 5 | 4 | 8 | 8 | 8 | 9 | 12 | 27½ | 81½ |
| G. A. McPhail, Campbellville, R.R. 1 | 5 | 4 | 8 | 8 | 8 | 8 | 13 | 27 | 81 |
| A. Young, Rockwood, R.R. 4 | 5 | 4 | 8 | 8 | 8 | 8 | 13 | 27 | 81 |
| Robt. Moore, do R.R. 2 | 4 | 4 | 7 | 9 | 8 | 7 | 12 | 30 | 81 |
| H. J. Black, do R.R. 4 | 4 | 4½ | 8 | 8 | 8 | 9 | 13 | 26 | 80½ |
| M. Wilson, do R.R. 1 | 4 | 4 | 8 | 7 | 8 | 8 | 12 | 28 | 79 |
| W. F. Bowles, do R.R. 3 | 4 | 4 | 8 | 7 | 8 | 8 | 13 | 27 | 79 |
| R. R. Rudd & Sons, Guelph, R.R. 2 | 5 | 4 | 8 | 8 | 8 | 8 | 12 | 25 | 78 |
| J. D. McNabb, Rockwood, R.R. 4 | 4 | 4 | 7 | 8 | 8 | 7 | 12 | 28 | 78 |
| W. R. Black, do | 5 | 4 | 8 | 8 | 8 | 8 | 12 | 25 | 78 |
| A. McCaig, do | 4 | 4 | 7 | 8 | 8 | 8 | 12 | 25 | 76 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

### TURNIPS.

| Competitors in Order of Merit. | Straightness of rows. | Method of seeding. | Proper thinning and cleaning. | Thoroughness of cultivation. | Freedom from insects and diseases. | Purity and uniformity of roots. | Shape and quality of roots. | Yield of roots per acre. | Totals of scores. |
|---|---|---|---|---|---|---|---|---|---|
| YORK. | [5] | [5] | [10] | [10] | [10] | [10] | [15] | [35] | [100] |
| MARKHAM AND E. YORK AGR. SOCIETY. | | | | | | | | | |
| *Judge—C. H. Walsh, Port Hope.* | | | | | | | | | |
| D. Tran, Claremont, R.R. 2... | 5 | 5 | 9½ | 10 | 9½ | 9½ | 14 | 32 | 94½ |
| W. Thompson & Sons, Markham..... | 4 | 5 | 10 | 10 | 9 | 10 | 14½ | 31 | 93½ |
| E. J. Jarvis, Markham, R.R. 2.. | 4½ | 4½ | 8½ | 10 | 10 | 9 | 14 | 32½ | 93 |
| W. A. Rennie, Agincourt..... | 5 | 4½ | 9 | 10 | 9 | 9½ | 14½ | 31 | 92½ |
| C. Boynton, Gormley..... | 4 | 5 | 10 | 9 | 10 | 9 | 14 | 31 | 92 |
| Jas. Torrance, Markham..... | 4½ | 5 | 9½ | 10 | 9½ | 9 | 14 | 29 | 90½ |
| Geo. Cowie, Milliken, R.R. 2.. | 4½ | 4 | 9½ | 9 | 9½ | 10 | 13½ | 30 | 90 |
| W. A. Maxwell, Markham.... | 4 | 5 | 9 | 9 | 9½ | 10 | 14 | 29 | 89½ |
| B. R. Johnston, Stouffville.... | 4 | 4½ | 8½ | 8½ | 9½ | 8 | 14 | 31 | 88 |
| J. W. Warriner, Markham, R.R. 2..... | 4 | 4½ | 8 | 9 | 9½ | 8 | 14 | 27 | 84 |
| W. W. Boynton, Gormley, R.R. 3..... | 4 | 4½ | 7½ | 7 | 8½ | 8 | 13½ | 29 | 82 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## GRAIN FROM STANDING FIELD CROP COMPETITIONS.

### Prize Winners at the Canadian National Exhibition, 1922.

| Prize Won | Competitors and Addresses | Variety |
|---|---|---|
| Oats | *Grain in Sacks* | |
| *Division No. 1—* | | |
| 1st | H. L. Goltz, Bardsville | O. A. C. 72 |
| 2nd | Sherman Polmateer, Gravenhurst | Reg. Banner |
| 3rd | Byron Laycock, Gravenhurst | Yellow Russian |
| 4th | Wilfred Wager, Rosseau | Am. Banner |
| *Division No. 2—* | | |
| 1st | Wesley J. Weldon, Uxbridge | O. A. C. 72 |
| 2nd | Thos. Sellers, Zephyr | O. A. C. 72 |
| 3rd | J. H. Lockie, Zephyr | O. A. C. 72 |
| 4th | Jas. A. Smith, Sanford | O. A. C. 72 |
| *Division No. 3—* | | |
| 1st | Andrew Schmidt, Mildmay | Banner |
| 2nd | A. & W. McKague, Teeswater, R.R. | O. A. C. 72 |
| 3rd | A. B. McDonald, Glencoe | O. A. C. 72 |
| 4th | McCowan Bros., Scarboro | Yellow Russian |
| Fall Wheat | | |
| *Division No. 2—* | | |
| 1st | D. A. Henry, Millbrook, R.R. 2 | Dawson's G. Chaff |
| 2nd | Walter McGregor, Bobcaygeon | Sleep and I'll Pay the Rent |
| 3rd | Alex. Mitchell, Bobcaygeon | Sleep and I'll Pay the Rent |
| 4th | R. Watts, Bobcaygeon | Sleep and I'll Pay the Rent |
| *Division No. 3—* | | |
| 1st | Wm. G. Woods, Maple, R.R. 2 | Dawson's G. Chaff |
| 2nd | G. W. R. Barrie & Son, Galt, R.R. 7 | Dawson's G. Chaff |
| 3rd | A. & W. McKague, Teeswater, R.R. 1 | Dawson's G. Chaff |
| 4th | A. A. Hawke, Coldwater, R.R. 3 | Dawson's G. Chaff |
| Barley | | |
| *Division No. 3—* | | |
| 1st | Alex. Morrison, Creemore, R.R. 2 | O. A. C. 21 |
| Peas | | |
| *Division No. 3—* | | |
| 2nd | A. Mielhausen, Lion's Head | Golden Vine. |

GRAIN FROM STANDING FIELD CROP COMPETITIONS—*Continued.*

PRIZE WINNERS AT THE CANADIAN NATIONAL EXHIBITION, 1922—*Continued.*

| Prize Won | Competitors and Addresses | Variety |
|---|---|---|
| OATS | *Sheaf Exhibit* | |
| *Division No. 1—* | | |
| 1st | H. L. Goltz, Bardsville | O. A. C. 72 |
| 2nd | John Hutton, Hutton House P. O. | Victor |
| 3rd | Wm. M. Sinclair, Huntsville | Banner |
| 4th | John Patterson, Huntsville | Banner |
| *Division No. 2—* | | |
| 1st | Thos. Cosh, Bobcaygeon | Banner |
| 2nd | John Lean, Cameron | O. A. C. 72 |
| 3rd | Robt. H. Smith, Galetta | O. A. C. 72 |
| 4th | Garfield Kennedy, Bobcaygeon | Banner |
| *Division No. 3—* | | |
| 1st | McCowan Bros., Scarboro | Yellow Russian |
| 2nd | H. M. Pettit, Freeman | O. A. C. 72 |
| 3rd | A. & W. McKague, Teeswater, R.R. 1 | O. A. C. 72 |
| 4th | Fred A. Clark, Gormley, R.R. | O. A. C. 72 |
| FALL WHEAT | | |
| *Division No. 2—* | | |
| 1st | R. E. Thurston, Bobcaygeon | Sleep and I'll Pay the Rent |
| 2nd | Garfield Kennedy, Bobcaygeon | Sleep and I'll Pay the Rent |
| 3rd | Alex. Mitchell, Bobcaygeon | Sleep and I'll Pay the Rent |
| 4th | R. Watts, Bobcaygeon | Sleep and I'll Pay the Rent |
| *Division No. 3—* | | |
| 1st | A. & W. McKague, Teeswater, R.R. 1 | Dawson's G. Chaff |
| 2nd | Geo. R. Barrie & Son, Galt, R.R. 7 | Dawson's G. Chaff |
| 3rd | W. Wood, Maple | Dawson's G. Chaff |
| 4th | A. A. Hawke, Coldwater, R.R. 3 | Dawson's G. Chaff |
| BARLEY | | |
| *Division No. 3—* | | |
| 1st | Alex. Morrison, Creemore, R.R. 2 | O. A. C. 21 |

GRAIN FROM STANDING FIELD CROP COMPETITIONS—*Continued*

PRIZE WINNERS AT THE CENTRAL CANADA EXHIBITION, 1922.

| Prize Won | Competitors and Addresses | Variety |
|---|---|---|
| OATS | *Grain in Sacks* | |
| 1st | A. & W. McKague, Teeswater, R.R. 1 | O. A. C. 72 |
| 2nd | Jas. A. Smith, Sandford | O. A. C. 72 |
| 3rd | Thos. Sellers, Zephyr | O. A. C. 72 |
| 4th | J. H. Locking, Zephyr | O. A. C. 72 |
| FALL WHEAT | | |
| 1st | D. A. Henry, Millbrook | Dawson's G. Chaff |
| 2nd | Walter McGregor, Bobcaygeon | Sleep and I'll Pay the Rent |
| 3rd | Geo. R. Barrie & Son, Galt, R.R. 7 | Dawson's G. Chaff |
| 4th | A. & W. McKague, Teeswater, R.R. 1 | Dawson's G. Chaff |
| SPRING WHEAT | | |
| 1st | Roy W. J. Gourlay, Kinburn | Marquis |
| BARLEY | | |
| 1st | Alex. Morrison, Creemore, R.R. 2 | O. A. C. 21 |
| 4th | Wm. Cleland, South Mountain | O. A. C. 21 |
| OATS | *Sheaf Exhibit* | |
| 1st | H. L. Goltz, Bardsville | O. A. C. 72 |
| 2nd | A. & W. McKague, Teeswater | O. A. C. 72 |
| 3rd | Garfield Kennedy, Bobcaygeon | Banner |
| 4th | Wm. G. Farrell, Winchester, R.R. 3 | Banner |
| BARLEY | | |
| 1st | Wm. Cleland, South Mountain | O. A. C. 21 |
| 2nd | Alex. Morrison, Creemore, R.R. 2 | O. A. C. 21 |

GRAIN FROM STANDING FIELD CROP COMPETITIONS—*Continued*

PRIZE WINNERS AT THE ONTARIO PROVINCIAL WINTER FAIR, GUELPH, 1922.

| Prize Won | Competitors and Addresses | Variety |
|---|---|---|
| OATS | *Grain in Sacks* | |
| 1st | Thos. G. Hutchinson, Rockwood, R.R. 1 | Banner |
| 2nd | H. L. Goltz, Bardsville | O. A. C. 72 |
| 3rd | Richard Wilton, Wingham | O. A. C. 72 |
| 4th | A. & W. McKague, Teeswater, R.R. 1 | O. A. C. 72 |
| 5th | W. J. Rynard, Zephyr | O. A. C. 72 |
| 6th | Otto Rappolt & Son, Guelph, R.R. 3 | Banner |
| 7th | Andrew Schmidt, Mildmay, R.R. 1 | O. A. C. 72 |
| 8th | Thos. Taylor, Wingham, R.R. 5 | O. A. C. 72 |
| 9th | Wesley Brown, Millbrook | Banner |
| 10th | D. Borho, Formosa, R.R. 1 | O. A. C. 72 |
| FALL WHEAT | | |
| 1st | Gilbert Hyndman, Melbourne | Dawson's G. Chaff |
| 2nd | D. A. Henry, Millbrook, R.R. 2 | Dawson's G. Chaff |
| 3rd | Walter McGregor, Bobcaygeon | Sleep and I'll Pay the Rent |
| 4th | Wm. Harding, St. Mary's, R.R. 1 | Dawson's G. Chaff |
| 5th | Wm. Winer & Son, Guelph, R.R. 3 | Dawson's G. Chaff |
| SPRING WHEAT | | |
| 1st | Jas. L. Miller & Son, Glasgow | Marquis |
| 2nd | Frank Abraham, Arnprior | Marquis |
| BARLEY | | |
| 1st | Russell See, Bolton, R.R. 4 | O. A. C. 21 |
| 2nd | Wm. D. Shields, Milton, R.R. 6 | O. A. C. 21 |
| PEAS | | |
| 1st | A. Mielhausen, Lion's Head | Canadian Beauty |
| 2nd | Jno. M. Gray, New Liskeard | Canadian Beauty |
| POTATOES | | |
| 1st | S. E. Griffin & Son, Acton, R.R. 2 | Dooley |
| 2nd | Wm. Naismith, Falkenburg | Dooley |
| 3rd | C. H. McCool, Devlin | Irish |
| 4th | J. T. Ross, Searchmont | Green Mountain |
| 5th | H. L. Goltz, Bardsville | Dooley |
| CORN (Dent) | | |
| 1st | C. Johnson & Sons, Kingsville | Bailey |
| 2nd | Jas. Wellwood, Merlin | Wisconsin No. 7 |
| 3rd | Ezra F. Clark, Highgate | W. C., Yel. Dent |
| 4th | Darcy E. Bondy, Arner, R.R. 1 | Bailey |
| 5th | Jas. A. French, Thedford, R.R. 3 | Golden Glow |
| CORN (Flint) | | |
| 1st | Robt. G. Dawson, Niagara-on-the-Lake, R.R. 2 | North Dakota |

GRAIN FROM STANDING FIELD CROP COMPETITIONS—*Continued.*

PRIZE WINNERS AT THE OTTAWA WINTER FAIR, OTTAWA, 1923.

| Prize Won | Competitors and Addresses | Variety |
|---|---|---|
| OATS | *Grain in Sacks.* | |
| 1st | H. L. Goltz, Bardsville | O.A.C. 72 |
| 2nd | W. J. Rynard, Zephyr | O.A.C. 72 |
| 3rd | Wesley Brown, Millbrook, R.R. 3 | Banner |
| 4th | Amos Snowdon, Zephyr | O.A.C. 72 |
| 5th | J. H. Lockie, Zephyr | O.A.C. 72 |
| 6th | S. E. Griffin & Son, Acton, R.R. 2 | Banner |
| 7th | Andrew Schmidt, Mildmay, R.R. 1 | O.A.C. 72 |
| 8th | Sam'l Bingham & Sons, Hillsburg, R.R. 2 | Banner |
| 9th | F. R. Gourlay, Kinburn | O.A.C. 72 |
| 10th | A. & W. McKague, Teeswater | O.A.C. 72 |
| FALL WHEAT | | |
| 1st | D. A. Henry, Millbrook | Dawson's G. Chaff |
| 2nd | Wm. W. Harding, St. Mary's | Dawson's G. Chaff |
| 3rd | Walter McGregor, Bobcaygeon | Sleep and I'll Pay the Rent. |
| 4th | Albert Ironside, Etrick, R.R. 1 | Dawson's G. Chaff |
| 5th | Alex. Mitchell, Bobcaygeon | Sleep and I'll Pay the Rent. |
| SPRING WHEAT | | |
| 1st | J. B. Serson, Kinburn, R.R. 1 | Marquis |
| 2nd | R. B. Leitch, Renfrew, R.R. 3 | Marquis |
| 3rd | Eugene St. Denis, Plantagenet | Marquis |
| 4th | Frank Abraham, Arnprior | Marquis |
| 5th | G. MacIntyre, Renfrew, Box 782 | Marquis |
| BARLEY | | |
| 1st | Fred Bryce, Batteau | O.A.C. 21 |
| 2nd | Russell See, Bolton, R.R. 4 | O.A.C. 21 |
| 3rd | Alex Morrison, Creemore, R.R. 2 | O.A.C. 21 |
| 4th | Wm. D. Shields, Milton, R.R. 6 | O.A.C. 21 |
| PEAS | | |
| 1st | A. Mielhausen, Lion's Head | Golden Vine |
| 2nd | Edson Jibb, New Liskeard, R.R. 1 | Arthur |
| 3rd | John M. Gray, New Liskeard | Arthur |

Competitors who will thresh and keep separate grain from the fields in the Standing Field Crop Competitions.

OATS.

C. E. Brownridge, Milton; Abundance.
Freeman Doak, Lansdowne; Abundance.
Chas. McIntyre, Peterboro, R.R.8; Abundance
Sam'l Comrie, Peterboro, R.R. 8; Abundance.
Bert Sanderson, Omemee; Abundance.
Fred Hopper, Bruce Mines, R.R. 1; Banner.
G. P. Kennedy, Tara, R.R. 5; Banner.
Jas. Young, Tara; Banner.
Jno. E. Dolphin, Tara; Banner
R. L. Coleman, Tara, R.R. 2; Banner.
N. McDougald, Tara; Banner.
Geo. Neil, Tara; Banner.
Geo. Miller, Allanford; Imp. Banner.
Jas. Tomlinson, Shallow Lake, Banner.
H. Hewitson, Owen Sound, R.R. 5; Imp. Ban.
S. D. Thorpe, S. Mountain; Banner.
J. D. Morris, Portsmouth, R.R. 1; Banner.
W. J. Berry, Kingston Mills, Banner.
Jas. Henderson & Son, Portsmouth; Banner.
Jas. Braden, Kingston Mills; Banner.
Jas. Baxter, Kingston, R.R. 1; Banner.
J. A. Penny, Kingston, R.R. 1; Banner.
W. Gordon, Kingston Mills, R.R. 1; Banner.
Jas. Shortell, Kingston, R.R. 1; Banner.
W. Fowler, Kingston, R.R. 1; Banner.
Geo. Maitland, Kingston Mills; Banner.
A. C. Day, Portsmouth, R.R. 1; Imp. Banner.
E. Hunter, Kingston, R.R. 1; Banner.
M. Fowler, Kingston, R.R. 1; Banner.
Angus A. McLeod, Dunvegan, R.R. 1; Banner.
E. Quinton, Walters Falls; Banner.
R. G. Hanna, Walters Falls; Banner.
G. T. Reid, Goring; Reg. Banner.
Thos. Dixon, Walters Falls; Banner.
Jno. Thom, Walters Falls; Banner.
Jos. E. Long, Walters Falls; Banner.
R. S. Lee, Chatsworth; Banner.
W. G. Milson, Chatsworth, R.R. 3; Banner.
E. P. Hamill, Chatsworth, R.R. 4; Banner.
J. A. Forgrave, Owen Sound, R.R. 5; Banner.
A. S. Donald, Tara, R.R. 5; Banner.
Albert Fleming, Tara, R.R. 5; Banner.
Henry Ruhl, Tara, R.R. 5; Banner.
Harry Breen, Tara, R.R. 5; Banner.
J. W. Sherman, Tara, R.R. 5; Banner.
E. H. Coulter, Owen Sound, R.R. 3; Banner.
Geo. Wylie, Kilsyth; Banner.
W. H. Marshall, Owen Sound, R.R. 5; Banner.
Jno. Leask, Owen Sound, R.R. 3; Banner.
H. Sergeant, Owen Sound, R.R. 4; Banner.
Geo. Anderson, Owen Sound; R.R. 3; Banner.
O. R. Smith, Owen Sound, R.R. 4; Banner.
J. M. Lynn, Owen Sound, R.R. 3; Banner.
Jas. Lynn, Owen Sound, R.R. 3; Banner.
Cecil Paterson, Milton; Banner.
Frankland Park Farm, Hornby; Banner.
H. Dixon, Milton; Banner.
J. H. Wilson, Milton; Banner.
Geo. Agnew; Milton; Banner.
Ernest Simpson, Milton; Banner.
D. L. McCreary, Wallaceburg, R.R. 2; Banner.
Jos. Coveny, Electric; Am. Banner.
Geo. W. Arnold, Wallaceburg, R.R. 3; Banner.
Walter McCarrol, Wallaceburg, R.R. 2; Banner
A. E. Fry, Wallaceburg, R.R. 1; Banner.
C. H. Crowe, Wallaceburg, R.R. 2; Banner.
Dougald Crawford, Electric; Banner.
Orrie Crowe, Wallaceburg, R.R. 5; Banner.
W. C. Gordon, Electric; Banner.
J. M. Langstaff, Tupperville, R.R. 3; Banner.
D. Coveny, Electric; Banner.
Geo. E. Jackson, Lyn; Banner.
W. J. Bolton, Bellamy, R.R. 1; Banner.
H. J. Willows, Lyn; Banner.
J. S. Moore, Bellamy, R.R. 1; Banner.
H. H. McNeil, Charleston; Banner.
Robt. Shields, Lansdowne; Banner.
S. Polmateer, Gravenhurst; Reg. Banner.
Wm. M. Sinclair, Huntsville; Banner.
Harry Young, Huntsville, Box 130; Banner.
Henry McKelvie, Campbellford; Banner.
Chas. E. Bell, Otterville; Banner.
Alex. Moore, LaSalette, R.R. 2; Banner.
J. W. Monk, Springford; Banner.
Fred Lee, Otterville, R.R. 1; Banner.
M. W. Haley, Otterville, R.R. 2; Banner.
J. L. Oatman, Tillsonburg, R.R. 3; Banner.
Albert Lawrence, LaSalette, R.R. 2; Banner.
J. R. Johnson, Springford; Banner.
W. Foreman, Norwich, R.R. 1; Banner.
Lewis Mason, Otterville; Banner.
M. Oatman, Tillsonburg, R.R. 3; Banner.
F. H. Kenney, Springford; Banner.
F. Malcolm, Springford; Banner.
Wm. Innis, Otterville, R.R. 2; Banner.
C. W. Sparling, Streetsville, R.R. 2; Banner.
J. W. Stein, Meadowvale; Reg. Banner.
Edmund Foley, Keene, R.R. 1; Imp. Banner.
Harry Reid, Lang, No. 19; Banner.
M. O'Keefe, Keene, R.R. 1; Banner.
F. A. Eason, Keene, R.R. 1; Banner.
W. A. Drummond, Peterboro, R.R. 8; Banner.
Geo. A. Peever, Renfrew, R.R. 3; Banner.
Arthur, McQuade, Omemee; Banner.
Ernest Ebel, Corbetton, R.R. 3; Bonanza.
Wm. Stewart, Keene, R.R. 2; Can. Pride.
W. A. Nelson, Keene, R.R. 1; Danish Swede.
C. C. Nelson, Peterboro, R.R. 8; Danish Swede.
Walter H. Fox, Picton, R.R. 8; E. Harvest.
Morris Bedell, Kemble; Granary Filler.
Arthur Garvie, Kemble, R.R. 2; Granary Filler.
Leslie Hurlbut, Kemble, R.R. 2; Granary Filler.
Jno. McGregor, Kemble, R.R. 2; Granary Filler
Russell Ward, Kemble, R.R. 1; Granary Filler.
G. McKenzie, Kemble, R.R. 1; Granary Filler.
Jno. Taylor, Kemble, R.R. 1; Granary Filler.
F. Davidson, Kemble, R.R. 1; Granary Filler.
D. Davidson, Kemble, R.R. 1; Granary Filler.
J. B. Wilson, Lansdowne; Granary Filler.
Jos. Colling, Lucknow, R.R. 3; Ligowa.
Edgar Adamson, Streetsville, R.R. 1; Ligowa.
J. W. Miller, Streetsville, R.R. 2; Ligowa.
G. McNair, Milton; Mammoth Cluster.
J. M. Henderson, Athens; Mammoth Cluster.
J. W. Hanna, Dundalk, R.R. 2; New Industrial.
G. W. Evoy, Bar River; Northland.
R. Evoy, Bar River; Northland.
Alex. Brodie, Bar River; Northland.
Jno. Booth, Bar River; Northland.
P. J. McMillan, Lucknow, R.R. 5; O.A.C. 72.

Competitors who will thresh and keep separate grain from the fields in the Standing Field Crop Competitions.

Oats.—*Continued.*

D. Graham, Kinloss, R.R. 5; O.A.C. 72.
A.&W.McKague, Teeswater, R.R.1; O.A.C. 72.
Harold Smith, Greenock, R.R. 1; O.A.C. 72.
Wm. McKenzie, Teeswater, R.R. 2; O.A.C. 72.
T.A. Goodfellow, Teeswater, R.R. 2; O.A.C. 72.
Wm. Cleland, S. Mountain; O.A.C. 72.
Stanley Malcolm, Nestleton; O.A.C. 72.
C.A. Kincaid, Kingston Mills, R.R.1; O.A.C.72.
W. J. Hunter, Kingston Mills; O.A.C. 72.
C. F. Baxter, Kingston, R.R. 1; O.A.C. 72.
Thos. Doyle, Kingston, R.R. 1; O.A.C. 72.
C. Rodgers, Kingston, R.R. 1; O.A.C. 72.
A. M. Smith, West Brook; O.A.C. 72.
A. E. Weller, Kingston, R.R. 5; O.A.C. 72.
J. Sibbitt, Kingston, R.R. 1; O.A.C. 72.
Ed. Braden, Kingston, R.R. 1; O.A.C. 72.
J. Brown, Kingston, R.R. 2; O.A.C. 72.
E. Elliott, Kingston, R.R. 5; O.A.C. 72.
Thos. Walton, Dundalk, R.R. 1; O.A.C. 72.
J. W. Davis, Markdale, R.R. 4; O.A.C. 72.
Robt. Swanton, Flesherton; O.A.C. 72.
A. D. Irwin, Priceville, R.R. 3; O.A.C. 72.
Mac. Cameron, Owen Sound, R.R. 4; O.A.C. 72.
A. Kemp, Chatsworth; O.A.C. 72.
Albert Cooper, Milton; O.A.C. 72.
J. H. Wilmot, Milton; O.A.C. 72.
W. D. Shields, Milton; O.A.C. 72.
Anson McDuffie, Milton; O.A.C. 72.
W. R. Hume, Milton; O.A.C. 72.
Edwin Harrop, Milton; O.A.C. 72.
E. A. McDougall, Milton; O.A.C. 72.
Harvey Handsor, Electric, R.R. 1; O.A.C. 72.
Lloyd Green, Sopertown; O.A.C. 72.
D. B. Johnston, Lansdowne; O.A.C. 72.
Wm. Rath, Lansdowne; O.A.C. 72.
W. B. Steacy, Lansdowne; O.A.C. 72.
H. McD. Gray, Lansdowne; O.A.C. 72.
Roy Breckenridge, Lansdowne; O.A.C. 72.
Geo. A. Steacy, Lansdowne; O.A.C. 72.
T. Rowland Hill, Hillside; O.A.C. 72.
Jno. Turnbull, Canal P.O.; O.A.C. 72.
Jno. Pleace, Canal; O.A.C. 72.
Emile Perrault, Notre Dame du Lac; O.A.C. 72.
Andre Beaudry, Verner; O.A.C. 72.
Jas. B. Leach, Verner; O.A.C. 72.
Henri Demers, Verner; O.A.C. 72.
Herve Filiatrault, Verner; O.A.C. 72.
F. Laframboise, Verner; O.A.C. 72.
Albert Gagnon, Verner, R.R. 1; O.A.C. 72.
E. Roberge, Verner, R.R. 1; O.A.C. 72.
D. Bouffard, Verner; O.A.C. 72.
Chas. Bonnycastle, Campbellford; O.A.C. 72.
H. S. Aylesworth, Norham; O.A.C. 72.
Wm. Rannie, Campbellford; O.A.C. 72.
Carnet Clinc, Campbellford; O.A.C. 72.
Alex. Hume, Campbellford; O.A.C. 72.
F. Fitzgerald, Indian River, R.R. 2; O.A.C.72.
Fred Morgan, Warsaw; O.A.C. 72.
David W. Rose, Warsaw, R.R. 1; O.A.C. 72.
Jno. A. Crowe, Lakefield; O.A.C. 72.
M. Grant Thompson, Bloomfield; O.A.C. 72.
H. Fred Hubb, Bloomfield; O.A.C. 72.
Urias Nelson, Demorestville; O.A.C. 72.
Jno. Stewart, Renfrew, R.R. 5; O.A.C. 72.
E. A. Bartlett, Warren; O.A.C. 72.
G. Nicholson, Warren; O.A.C. 72.
Bert Botsford, Warren, Box 41; O.A.C. 72.
F. McDonald, Warren, Box 37; O.A.C. 72.
F. Anderson, Warren; O.A.C. 72.
W. Dixon, Warren; O.A.C. 72.
K. Munroe, Warren; O.A.C. 72.
D. H. Dick, Omemee; O.A.C. 72.
Harold Dick, Omemee; O.A.C. 72.
H. Skusky, Bruce Mines, R.R. 3; O.A.C. 72.
John Carter, Portlock; O.A.C. 72.
Robt. Carter, Portlock; O.A.C. 72.
Sam'l Rowe, Bruce Mines, R.R. 1; O.A.C. 72.
John Shaule, Bruce Mines, R.R. 1; O.A.C. 72.
R. S. McEwen, Bruce Mines, R.R. 1; O.A.C.72.
Geo. Morbin, Bruce Mines, R.R. 1; O.A.C. 72.
Moses Legg, Dobbinton; O.A.C. 72.
H. Anderson, Hepworth; O.A.C. 72.
John Eldridge, Hepworth; O.A.C. 72.
C. A. Millard, Hepworth; O.A.C. 72.
Dennis Shea, Warren; O.A.C. 3.
Wm. Rutherford, Lucknow; Rennie's E.Yielder
W. Henderson, Lucknow, R.R. 3; Siberian.
W. E. McPherson, Lucknow, R.R. 2; Siberian.
Bird Bros., Lucknow, R.R. 3; Siberian.
Jos. May, Ravenscliffe; Siberian.
Ralph E. Drummond, Peterboro, R.R. 8; Siberian.
A. Walton, Lucknow, R.R. 2; 20th Century.
H. R. Rutherford, Lucknow; White Wave.
Jas. Higginson, Inkerman; White Wave.
W. G. Timins, Inkerman; White Wave.
Geo. T. Timins, Inkerman; White Wave.
Wm. Bishop, Keene, R.R. 1; Wide Awake.
W. L. McCracken, Meadowvale; Yel. Russian.

FALL WHEAT.

Peter L. Graham, Ilderton; Dawson's G. Chaff.
Donaldson Bros., Ettrick; Dawson's G. Chaff.
L. G. McClary, London, R.R. 2; Dawson's G. Chaff.
Ninian Grieve, Ilderton, R.R. 2; Dawson's G. Chaff.
Lorne Eaton, Appin; Dawson's G. Chaff.
A. S. Clemens, Hespeler; Dawson's G. Chaff.
R. & D. Arthur, Branchton; Dawson's G. Chaff.
E. L. Kemkes, Branchton, R.R. 1; Michigan Amber.

SPRING WHEAT.

Wm. Young, Arnprior; Marquis.
J. Rafter, Arnprior; White Fife.

# RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS

## OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Score. | 40% of Bin Score. | Totals of Scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| **BRANT.** | | [100] | [100] | | | | |
| PARIS AGR. SOCIETY. | | | | | | | |
| *Judges—R. H. Harding, Thorndale; W. J. W. Lennox, Toronto* | | | | | | | |
| A. W. Pate, Paris, R.R. 4 | Banner | 90½ | 79 | 54.3 | 31.6 | 85.9 | |
| W. D. Barker, do R.R. 2 | do | 87 | 84 | 52.2 | 33.6 | 85.8 | |
| D. Patton, do | do | 89½ | 80 | 53.7 | 32 | 85.7 | 10 |
| R. J. McCormick, do R.R. 4 | do | 88½ | 81 | 53.1 | 32.4 | 85.5 | 10, 9 |
| Fred Luck, do R.R. 4 | do | 87½ | 82¼ | 52.5 | 32.9 | 85.4 | |
| E. Daniels, Princeton | do | 91½ | 76 | 54.9 | 30.4 | 85.3 | |
| Jos. Martin, Paris, R.R. 3 | do | 86¾ | 83 | 52.05 | 33.2 | 85.25 | |
| Allan Edgar, do R.R. 3 | do | 92 | 75 | 55.2 | 30 | 85.2 | |
| Jno. Doyle, do | do | 85½ | 83 | 51.3 | 33.2 | 84.5 | 10 |
| E. Plant, Burford, R.R. 2 | do | 92½ | 70 | 55.5 | 28 | 83.5 | |
| A. Gilbert, Paris, R.R. 2 | do | 86½ | 78 | 51.9 | 31.2 | 83.1 | |
| J. R. Moyle, do R.R. 4 | do | 88 | 74 | 52.8 | 29.6 | 82.4 | |
| Geo. W. Haas & Son, Paris, R.R. 1 | do | 86 | 68 | 51.6 | 27.2 | 78.8 | |
| W. Webber, do R.R. 2 | do | 91 | 58 | 54.6 | 23.2 | 77.8 | 9, 13 |
| **BRUCE.** | | | | | | | |
| EASTNOR AGR. SOCIETY. | | | | | | | |
| *Judges—Jas. H. McKee, Shelburne; W. J. W. Lennox, Toronto.* | | | | | | | |
| R. E. Cameron, Lion's Head, R.R. 1 | Banner | 92 | 84 | 55.2 | 33.6 | 88.8 | |
| Jas. Fowlie, do | do | 90½ | 80 | 54.3 | 32 | 86.3 | 15 |
| A. P. Bray, do | do | 89½ | 80 | 53.7 | 32 | 85.7 | |
| W. Jenks, do | do | 91 | 77 | 54.6 | 30.8 | 85.4 | |
| S. L. Rutherford, do | do | 92½ | 71 | 55.5 | 28.4 | 83.9 | |
| Chas. D. Shaw, do | do | 85 | 81 | 51 | 32.4 | 83.4 | |
| J. Dawson, Lion's Head, R.R. 2 | do | 90 | 71 | 54 | 28.4 | 82.4 | |
| Thos. Parsons, do | do | 87½ | 52 | 52.5 | 20.8 | 73.3 | 15 |
| W. J. Walpole, do | do | 84.5 | 49 | 50.7 | 19.6 | 70.3 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

‡See key page

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | †Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| BRUCE.—*Continued.* | | [100] | [100] | | | | |
| NORTH BRUCE AND SAUGEEN AGR. SOCIETY. | | | | | | | |
| *Judges—T. L. Mercer, Markdale; W. J. W. Lennox, Toronto.* | | | | | | | |
| Chris. Bell, Port Elgin | Banner | 91 | 90 | 54.6 | 36 | 90.6 | 11 |
| Jos. Thede, do | do | 95 | 80 | 57 | 32 | 89 | 1 |
| John Baker, do R.R. 3 | do | 87 | 76 | 52.2 | 30.4 | 82.6 | 1. 2 |
| Josh. Howe, Paisley, R.R. 4 | do | 94 | 64 | 56.4 | 25.6 | 82 | 10. 14 |
| Wm. Botterill, Port Elgin, R.R.3 | do | 88 | 69 | 52.8 | 27.6 | 80.4 | 14 |
| W. Bulger, do R.R. 1 | do | 83 | 74 | 49.8 | 29.6 | 79.4 | |
| A. Lamont, do R.R. 3 | do | 93 | 58 | 55.8 | 23.2 | 79 | |
| F. Elliott, do | do | 90 | 62 | 54 | 24.8 | 78.8 | |
| Jas. Scott, do R.R. 3 | do | 87 | 62 | 52.2 | 24.8 | 77 | 14 |
| Alex. McDonald, Paisley, R.R. 4 | do | 92 | 48 | 55.2 | 19.2 | 74.4 | 2 |
| PINKERTON AGR. SOCIETY. | | | | | | | |
| *Judges—Jas. H. McKee, Shelburne; W.J.W. Lennox, Toronto.* | | | | | | | |
| A. Alexander, Pinkerton | Banner | 91 | 86 | 54.6 | 34.4 | 89 | |
| J. Holm, Walkerton, R. R. 4 | do | 86 | 90 | 51.6 | 36 | 87.6 | 1, 15 |
| Jno. Mutrie, Pinkerton, | do | 83½ | 92 | 50.1 | 36.8 | 86.9 | 1 |
| Wm. S. Keyes, do R.R. 1 | do | 87 | 85 | 52.2 | 34 | 86.2 | 2 |
| E. Tolton, Walkerton, R.R. 3 | do | 82 | 89 | 49.2 | 35.6 | 84.8 | 1 |
| W. J. Cruickshank, Pinkerton | do | 82½ | 83 | 49.5 | 33.2 | 82.7 | |
| W. E. Taylor, do | do | 91½ | 67 | 54.9 | 26.8 | 81.7 | |
| D. Pinkerton, do | do | 69 | 87 | 41.4 | 34.8 | 76.2 | 1 |
| Jno. Clancy, Sr., Cargill | do | 76½ | 64 | 45.9 | 25.6 | 71.5 | 1 |
| CARLETON. | | | | | | | |
| CARP AGR. SOCIETY. | | | | | | | |
| *Judges—J. H. Wiggins, Kemptville, R.R. 4; T. G. Raynor, Ottawa.* | | | | | | | |
| W. J. Johnston, Carp | Banner | 90½ | 79 | 54.3 | 31.6 | 85.9 | 4, 15 |
| E. H. Graham & Son, do | do | 88½ | 78 | 53.1 | 31.2 | 84.3 | 4, 10 |
| J. McBride, do | do | 90 | 73.5 | 54 | 29.4 | 83.4 | 12, 7 |
| H. K. Hodgins, do | do | 91 | 70.5 | 54.6 | 28.2 | 82.8 | 10 |
| W. G. Rivington, do | do | 91½ | 68 | 54.9 | 27.2 | 82.1 | 4, 10 |
| G. H. Hodgins & Son, do | do | 86 | 72.5 | 51.6 | 29 | 80.6 | 4 |
| S. J. Sissons, South March | do | 83 | 67.5 | 49.8 | 27 | 76.8 | 4, 10 |
| Gordon Hodgins, Carp | do | 84 | 60.5 | 50.4 | 24.2 | 74.6 | 2, 4 |
| V. McCord, do | do | 80 | 66 | 48 | 26.4 | 74.4 | 4, 15 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| CARLETON.—*Continued.* | | [100] | [100] | | | | |
| FITZROY AGR. SOCETY. | | | | | | | |
| *Judges—S. G. Gourlay, Ottawa; T. G. Raynor, Ottawa.* | | | | | | | |
| Robt. H. Smith, Galetta | O. A. C. 72 | 91.5 | 95 | 54.9 | 38 | 92.9 | |
| F. R. Gourlay, Kinburn | do | 90.5 | 96 | 54.3 | 38.4 | 92.7 | |
| W. T. Smith, Galetta | do | 90 | 92 | 54 | 36.8 | 90.8 | |
| H. E. Miller, Arnprior | do | 91 | 82 | 54.6 | 32.8 | 87.4 | |
| A. J. Halpenny, Galetta | do | 86 | 83.5 | 51.6 | 33.4 | 85 | |
| Roy Gourlay, Kinburn | do | 80.5 | 70 | 48.3 | 28 | 76.3 | |
| J. B. Sisson, do | do | 81 | 69 | 48.6 | 27.6 | 76.2 | |
| F. Herrick, Galetta | do | 78 | 63 | 46.8 | 25.2 | 72 | |
| METCALFE AGR. SOCIETY. | | | | | | | |
| *Judges—Peter Wilson, Cobden; T. G. Raynor, Ottawa.* | | | | | | | |
| W. Brownlee & Son, North Gower | Banner | 85 | 75 | 51 | 30 | 81 | 2 |
| P. Anderson, Metcalfe, R.R. 1. | do | 85½ | 55 | 51.3 | 22 | 73.3 | 5 |
| Geo. W. Acres, Vernon | do | 83 | 52 | 49.8 | 20.8 | 70.6 | 2, 15 |
| DUFFERIN. | | | | | | | |
| EAST LUTHER AGR. SOCIETY. | | | | | | | |
| *Judges—Jas. McLean, Richmond Hill; W. J. W. Lennox, Toronto.* | | | | | | | |
| Geo. Gier, Waldemar, R.R. 1 | Banner | 91¾ | 77 | 55.05 | 30.8 | 85.85 | 15 |
| Jno. A. Allan, Grand Valley | do | 89.5 | 79 | 53.7 | 31.6 | 85.3 | 2 |
| Robt. Fuller, do R.R. 3 | do | 90¼ | 77 | 54.15 | 30.8 | 84.95 | 2, 4 |
| W. E. Tovell, do | do | 94 | 71 | 56.4 | 28.4 | 84.8 | 4, 14 |
| W. Garbutt, Waldemar, R.R. 1 | do | 85½ | 80 | 51.3 | 32 | 83.3 | 2, 15 |
| W. Richardson, Grand Valley | do | 86½ | 77 | 51.9 | 30.8 | 82.7 | 2, 4, 3 |
| Jno. Dickson, Colbeck | do | 88¼ | 71 | 52.95 | 28.4 | 81.35 | 2 |
| Eli Newson, Grand Valley | do | 83 | 63 | 49.8 | 25.2 | 75 | 1, 4, 2 |
| Wm. Wilmott, do R.R. 3 | do | 71 | 81 | 42.6 | 32.4 | 75 | 2, 15 |
| DURHAM. | | | | | | | |
| CLARK TP. AGR. SOCIETY. | | | | | | | |
| *Judges—Wm. Hickson, Bobcaygeon; T. G. Raynor, Ottawa.* | | | | | | | |
| C. A. Chapman, Orono | Banner | 93 | 89 | 55.8 | 35.6 | 91.4 | 15 |
| F. W. L. Tamblyn, do | do | 86.5 | 88.5 | 51.9 | 35.4 | 87.3 | 1, 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Score. | 40% of Bin Score. | Totals of Scores. | †Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| DURHAM.—*Continued.* | | [100] | [100] | | | | |
| CLARK TP. AGR. SOCIETY.—*Con.* | | | | | | | |
| F. J. Brimacombe, Orono | Banner | 88 | 79.5 | 52.8 | 31.8 | 84.6 | |
| A. A. Gibson, do | do | 87 | 78 | 52.2 | 31.2 | 83.4 | 15 |
| E. E. Patterson, do | do | 78.5 | 83 | 47.1 | 33.2 | 80.3 | 4, 15 |
| A. A. Somerville, do | do | 86 | 61.5 | 51.6 | 24.6 | 76.2 | 1, 15 |
| Jno. Berry, do | do | 68.5 | 87.5 | 41.1 | 35 | 76.1 | 2 |
| J. T. Chapman, do | do | 69 | 84 | 41.4 | 33.6 | 75 | 1, 2 |
| G. Powers, do | do | 87.5 | 47 | 52.5 | 18.8 | 71.3 | 15 |
| MILLBROOK AGR. SOCIETY. | | | | | | | |
| *Judges—Jno.Gardhouse, Weston; T. G. Raynor, Ottawa.* | | | | | | | |
| H. Bland, Ida | Banner | 92½ | 91 | 55.5 | 36.4 | 91.9 | 15 |
| H. Tait, Millbrook, R.R. 1 | do | 90½ | 87½ | 54.3 | 35 | 89.3 | 2 |
| T. A. Kelly, Fraserville | do | 92 | 84½ | 55.2 | 33.8 | 89 | 2 |
| W. W. Kennedy, Millbrook, R.R. 2 | do | 91 | 83 | 54.6 | 33.2 | 87.8 | 4 |
| Wes. Brown, do R.R. 3 | do | 86 | 89½ | 51.6 | 35.8 | 87.4 | 4 |
| H. J. Hubbeard, do R.R. 3 | do | 85 | 90 | 51 | 36 | 87.2 | 4 |
| W. R. N. Sharpe, Ida | do | 91½ | 75 | 54.9 | 30 | 84.9 | |
| J. Henderson & Son, Millbrook, R.R. 3 | do | 87½ | 79 | 52.5 | 31.6 | 84.1 | |
| W. Geo. Bonner, do R.R. 1 | do | 85 | 80 | 51 | 32 | 83 | 1, 4, 2 |
| D. A. Henry, do R.R. 2 | do | 87 | 73 | 52.2 | 29.2 | 81.4 | 15 |
| R. J. McKnight, do | do | 88½ | 64½ | 53.1 | 25.8 | 78.9 | 1, 15 |
| J. E. Whittington, S. Monaghan | do | 90 | 61½ | 54 | 24.6 | 78.6 | 4 |
| PORT HOPE AGR. SOCIETY. | | | | | | | |
| *Judges—A. Forster, Markham; T. G. Raynor, Ottawa.* | | | | | | | |
| A. E. Meadows, Port Hope | Banner | 91½ | 86 | 54.9 | 34.4 | 89.3 | 10 |
| Wm. Lightle, do | do | 89 | 77 | 53.4 | 30.8 | 84.2 | 15 |
| Fred Hawkins, do | do | 85¾ | 74 | 51.45 | 29.6 | 81.05 | 1, 10, 4 |
| H. A. Holdsworth, Cobourg | do | 89½ | 58 | 53.7 | 23.2 | 76.9 | 4,10,15 |
| T. J. Johnston, Port Hope | do | 70¾ | 83½ | 42.45 | 33.4 | 75.85 | 2, 10 |
| E. Austin, do | do | 74½ | 77 | 44.7 | 30.8 | 75.5 | 2 |
| Barrie Bros., do | do | 77½ | 71 | 46.5 | 28.4 | 74.9 | 2, 1, 15 |
| W. J. Crowhurst, do | do | 86¾ | 57 | 52.05 | 22.8 | 74.85 | 1, 15 |
| Jno. H. Bosnell, do | do | 71¼ | 76½ | 42.75 | 30.6 | 73.35 | 2, 15 |
| B. S. Dickinson, do R.R. 3 | do | 76 | 66 | 45.6 | 26.4 | 72 | 1, 10 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Score. | 40% of Bin Scores. | Total of Scores. | Weeks in competitors' fields. |
|---|---|---|---|---|---|---|---|
| DURHAM.—*Continued.* | | [100] | [100] | | | | |
| WEST DURHAM AGR. SOCIETY. | | | | | | | |
| *Judges—E. H. Purdy, Port Perry; T. G. Raynor, Ottawa.* | | | | | | | |
| Jas. Leask & Son, Taunton | Banner | 99 | 92.5 | 59.4 | 37 | 96.4 | |
| A. W. Annis, Tyrone | do | 96 | 93.5 | 57.6 | 37.4 | 95 | |
| Robt. J. Gills, Bowmanville, R.R. 4 | do | 97 | 82.5 | 58.2 | 33 | 91.2 | |
| J. Baker, Hampton | do | 94 | 80 | 56.4 | 32 | 88.4 | |
| I. S. M. Hardy, do R.R. 1 | do | 93 | 78 | 55.8 | 31.2 | 87 | |
| A. L. Pascoe & Son, do | do | 91 | 77.5 | 54.6 | 31 | 85.6 | |
| R. E. Osborne, Bowmanville, R.R. 2 | do | 98 | 66 | 58.8 | 26.4 | 85.2 | |
| J. F. Osborne, Newcastle | do | 90 | 71 | 54 | 28.4 | 82.4 | |
| A.H. Brent, Bowmanville, R.R.5 | do | 80 | 85 | 48 | 34 | 82 | |
| S. E. Werry, Hampton, R.R. 1 | do | 92 | 63.5 | 55.2 | 25.4 | 80.6 | |
| T. Baker, do | do | 89 | 50.5 | 53.4 | 20.2 | 73.6 | 4 |
| H.S. Barrie, Bowmanville, R.R.4 | do | 95 | 37 | 57 | 14.8 | 71.8 | |
| ELGIN. | | | | | | | |
| ALDBOROUGH AGR. SOCIETY. | | | | | | | |
| *Judges—Jas. Pullin, Woodstock; W. J. W. Lennox, Toronto.* | | | | | | | |
| J. A. King & Son, Wardsville | Banner | 92½ | 87 | 55.5 | 34.8 | 90.3 | |
| W. W. Campbell & Son, do | do | 81 | 89 | 48.6 | 35.6 | 84.2 | |
| A. Purcell, do | do | 88 | 73 | 52.8 | 29.2 | 82 | |
| H. Johnston, do | do | 76½ | 90 | 45.9 | 36 | 81.9 | 15 |
| J. J. Johnston, do | do | 77 | 87 | 46.2 | 34.8 | 81 | 15 |
| E. J. Purcell, do | do | 77½ | 78 | 46.5 | 31.2 | 77.7 | |
| J. F. McGregor, do | do | 70 | 89 | 42 | 35.6 | 77.6 | 15 |
| R. A. Kerr, Rodney | do | 88½ | 60 | 53.1 | 24 | 77.1 | 14 |
| A. Johnston, Wardsville | do | 78 | 67 | 46.8 | 26.8 | 73.6 | 15,14 |
| WEST ELGIN AGR. SOCIETY. | | | | | | | |
| *Judges—B. R. Cohoe, Woodslee; W. J. W. Lennox, Toronto.* | | | | | | | |
| W. S. Pearce, Wallacetown | Banner | 93½ | 85 | 56.1 | 34 | 90.1 | |
| S. L. Pearce, do | do | 94 | 79 | 56.4 | 31.6 | 88 | |
| S. M. Pearce, Fingal | do | 90 | 84 | 54 | 33.6 | 87.6 | |
| E. S. Backus, Wallacetown | do | 88½ | 84 | 53.1 | 33.6 | 86.7 | |
| J. E. Pearce, do | do | 92 | 75 | 55.2 | 30 | 85.2 | |
| W. R. Pollard, Iona Station | do | 89 | 78 | 53.4 | 31.2 | 84.6 | 15, 9 |
| E. H. Pearce, Wallacetown | do | 92½ | 67 | 55.5 | 26.8 | 82.3 | |
| Jno. H. Sloan, Fingal | do | 86½ | 74 | 51.9 | 29.6 | 81.5 | 15, 9 |
| W. H. McAllister, Dutton | do | 89½ | 62 | 53.7 | 24.8 | 78.5 | |
| F. E. Smith, Wallacetown | do | 87 | 57 | 52.2 | 22.8 | 75 | 15 |
| Ezra Bedford, do R.R. 1 | do | 82 | 54 | 49.2 | 21.6 | 70.8 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| GRENVILLE. | | [100] | [100] | | | | |
| KEMPTVILLE AGR. SOCIETY. | | | | | | | |
| *Judges—Peter Wilson, Cobden; T. G. Raynor, Ottawa.* | | | | | | | |
| S. H. Harris, Oxford Mills | Banner | 91 | 85 | 54.6 | 34 | 88.6 | 15 |
| A. H. Davidson, Kemptville, R.R. 4 | do | 93 | 80 | 55.8 | 32 | 87.8 | |
| Jas. Sloan, do R.R. 5 | do | 86.5 | 75 | 51.9 | 30 | 81.9 | 2, 5 |
| G. E. Wiggins, do R.R. 4 | do | 88 | 54 | 52.8 | 21.6 | 74.4 | 10 |
| J. C. Connerty, do R.R. 5 | do | 88½ | 51½ | 53.1 | 20.6 | 73.7 | |
| H. Lucas, do R.R. 4 | do | 85.5 | 51 | 51.3 | 20.4 | 71.7 | 10 |
| C. L. Bishop, Oxford Mills | do | 85 | 51.5 | 51 | 20.6 | 71.6 | 2, 10 |
| GREY. | | | | | | | |
| DESBORO AGR. SOCIETY. | | | | | | | |
| *Judges—W.F.B. Switzer, Streetsville; W. J. W. Lennox, Toronto.* | | | | | | | |
| J. Halliday, Chatsworth, R.R. 3 | Banner | 90 | 89 | 54 | 35.6 | 89.6 | 1 |
| W. J. Bryans, Desboro | do | 91 | 85 | 54.6 | 34 | 88.6 | 15 |
| Jos. E. McNabb, do | do | 82 | 84 | 49.2 | 33.6 | 82.8 | 15 |
| H. Furrow, Chatsworth, R.R. 3 | do | 85 | 78 | 51 | 31.2 | 82.2 | 15 |
| Ed. Carson, do | do | 89 | 71 | 53.4 | 28.4 | 81.8 | 15 |
| Mrs. A. Halliday, do | do | 84 | 56 | 50.4 | 22.4 | 72.8 | |
| J. Lembke, Chesley, R.R. 4 | do | 80 | 56 | 48 | 22.4 | 70.4 | 1 |
| EGREMONT AGR. SOCIETY. | | | | | | | |
| *Judges—W.F.B. Switzer, Streetsville; W. J. W. Lennox, Toronto.* | | | | | | | |
| Robt. Aitken, Holstein | Banner | 89 | 90 | 53.4 | 36 | 89.4 | 15 |
| W. W. Ramage, Varney | do | 86½ | 92 | 51.9 | 36.8 | 88.7 | |
| Jas. A. Smith, Holstein, R.R. 1 | do | 86 | 89 | 51.6 | 35.6 | 87.2 | 2, 15 |
| Jos. A. Dixon, Varney | do | 80 | 94 | 48 | 37.6 | 85.6 | 2, 15 |
| A. Hunter, Holstein, R.R. 2 | do | 88 | 67 | 52.8 | 26.8 | 79.6 | 11 |
| C. Harrison, Varney | do | 81 | 74 | 48.6 | 29.6 | 78.2 | 2, 15 |
| Jno. Stevenson, Holstein | do | 88½ | 52 | 53.1 | 20.8 | 73.9 | |
| Main Bros., do R.R. 2 | do | 87 | 45 | 52.2 | 18 | 70.2 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | Weeds in competitors' fields |
|---|---|---|---|---|---|---|---|
| HURON. | | [100] | [100] | | | | |
| GODERICH IND. AGR. SOCIETY. | | | | | | | |
| *Judges—Geo. Binnie, Priceville; W. J. W. Lennox, Toronto.* | | | | | | | |
| Frank Young, Goderich, R.R. 5 | Banner | 89 | 88 | 53.4 | 35.2 | 88.6 | |
| Chas. Prouse, do R.R. 1 | do | 86 | 85 | 51.6 | 34 | 85.6 | |
| T. M. Snowden, Zurich, R.R. 2 | do | 88 | 78 | 52.8 | 31.2 | 84 | |
| Robt. Andrews, Goderich, R.R.2 | do | 91 | 66 | 54.6 | 26.4 | 81 | |
| Wm. H. Hill, do R.R.4 | do | 92 | 63 | 55.2 | 25.2 | 80.4 | |
| Jno. G. Schwanz, Clinton, R.R.2 | do | 93 | 52 | 55.8 | 20.8 | 76.6 | 15, 12 |
| Jno. Sowerby, Goderich, R.R. 2 | do | 88½ | 57 | 53.1 | 22.8 | 75.9 | |
| I. Hetherington, Sheppardton | do | 89½ | 53 | 53.7 | 21.2 | 74.9 | |
| Robt. Snowden, Est., Bayfield, R.R. 3 | do | 90 | 50 | 54 | 20 | 74 | 1 |
| Jas. Chisholm, Goderich, R.R. 3 | do | 95 | 34 | 57 | 13.6 | 70.6 | |
| TURNBERRY AGR. SOCIETY. | | | | | | | |
| *Judges—Geo. Binnie, Priceville; W. J. W. Lennox, Toronto.* | | | | | | | |
| R. Wilton, Wingham, R.R. 1 | O. A. C. 72 | 95 | 93 | 57 | 37.2 | 94.2 | |
| G. N. Underwood, do R.R. 1 | do | 93½ | 92 | 56.1 | 36.8 | 92.9 | |
| I. J. Wright, do R.R. 1 | do | 94 | 88 | 56.4 | 35.2 | 91.6 | 2 |
| Wm. Wellings, do R.R. 5 | do | 91¾ | 90 | 55.05 | 36 | 91.05 | |
| D. S. McNaughton, do R.R. 1 | do | 89 | 88 | 53.4 | 35.2 | 88.6 | |
| Chas. Carter, do R.R. 5 | do | 90 | 82 | 54 | 32.8 | 86.8 | |
| P. McEwen, do R.R. 1 | do | 88 | 82 | 52.8 | 32.8 | 85.6 | |
| Thos. Taylor, do R.R. 5 | do | 92½ | 72 | 55.5 | 28.8 | 84.3 | |
| H. T. Perdue, do R.R. 5 | do | 91 | 62 | 54.6 | 24.8 | 79.4 | 14 |
| F. Henry, Lucknow, R.R. 5 | do | 90½ | 57 | 54.3 | 22.8 | 77.1 | |
| Wm. Webster, do R.R. 2 | do | 92 | 48 | 55.2 | 19.2 | 74.4 | |
| KENT. | | | | | | | |
| HARWICH AGR. SOCIETY. | | | | | | | |
| *Judges—E.J.Mullins, Woodslee; W. J. W. Lennox, Toronto.* | | | | | | | |
| Ed Patterson, Blenheim, R.R. 6 | Banner | 96 | 88 | 57.6 | 35.2 | 92.8 | |
| A. I. Huffman, Mull, R.R. 1 | do | 85 | 97 | 51 | 38.8 | 89.8 | |
| W. Thompson, Blenheim, R.R. 3 | do | 89 | 90 | 53.4 | 36 | 89.4 | |
| Ian Maynard, Chatham, R.R. 3 | do | 92 | 85 | 55.2 | 34 | 89.2 | |
| David Irving, Blenheim, R.R. 3 | do | 88 | 90 | 52.8 | 36 | 88.8 | |
| Wm. McNeill, Chatham, R.R. 3 | do | 87 | 88 | 52.2 | 35.2 | 87.4 | |
| S. Campbell, Blenheim, R.R. 2 | do | 86 | 89 | 51.6 | 35.6 | 87.2 | |
| A. G. Jeffrey, Chatham, R.R. 3 | do | 86½ | 84 | 51.9 | 33.6 | 85.5 | |
| Wm. Snow, Blenheim | do | 84 | 71 | 50.4 | 28.4 | 78.8 | |
| Neil Haggart, do R.R. 2 | do | 80 | 66 | 48 | 26.4 | 74.4 | |
| Jas. Nevills, do R.R. 2 | do | 80 | 64 | 48 | 25.6 | 73.6 | |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| LAMBTON. | | [100] | [100] | | | | |
| BROOK AND ALVINSTON AGR. SOCIETY. | | | | | | | |
| *Judges—E.J.Mullins, Woodslee; W. J. W. Lennox, Toronto.* | | | | | | | |
| D. Cann, Alvinston, R.R. 4.. | Banner ..... | 97 | 86 | 58.2 | 34.4 | 92.6 | |
| N. McCallum, do R.R. 4.. | do ..... | 96½ | 80 | 57.9 | 32 | 89.9 | |
| H. A. Gilroy, do R.R. 6.. | do ..... | 85½ | 93 | 51.3 | 37.2 | 88.5 | |
| D. G. Maddock, do R.R. 7.. | do ..... | 86 | 73 | 51.6 | 29.2 | 80.8 | |
| T. Braithwaite, do R.R. 4.. | do ..... | 94½ | 58 | 56.7 | 23.2 | 79.9 | |
| D. Hayter, do R.R. 4.. | do ..... | 95 | 50 | 57 | 20 | 77 | |
| W. J. Weed, do R.R. 7.. | do ..... | 82 | 66 | 49.2 | 26.4 | 75.6 | |
| F. Pavey, do R.R. 1.. | do ..... | 93 | 45 | 55.8 | 18 | 73.8 | |
| LENNOX. | | | | | | | |
| ADDINGTON AGR. SOCIETY. | | | | | | | |
| *Judges—M. W. Young, Woodrous; T. G. Raynor, Ottawa.* | | | | | | | |
| Bert S. Lockhead, Enterprise, R.R. 1..... | Banner ..... | 90½ | 83 | 54.3 | 33.2 | 87.5 | 10 |
| W. Breault, Centreville, R.R. 1 | do ..... | 89½ | 77 | 53.7 | 30.8 | 84.5 | 4 |
| A. A. Jackson, Enterprise ..... | do ..... | 80 | 88.5 | 48 | 35.4 | 83.4 | 4 |
| W. T. Jackson, do ..... | do ..... | 81½ | 75 | 48.9 | 30 | 78.9 | 15 |
| Fred Brown Centreville ..... | do ..... | 84½ | 61.5 | 50.7 | 24.6 | 75.3 | |
| Geo. A. McGill, do ..... | do ..... | 85½ | 59.5 | 51.3 | 23.8 | 75.1 | 2, 4 |
| J. W. Wagar, do ..... | do ..... | 90 | 50 | 54 | 20 | 74 | 4 |
| A. W. Milligan, do ..... | do ..... | 83½ | 54 | 50.1 | 21.6 | 71.7 | 10, 15 |
| W. S. Lockwood, Enterprise, R.R. 1..... | do ..... | 80½ | 54½ | 48.3 | 21.8 | 70.1 | 2,10,15 |
| MIDDLESEX. | | | | | | | |
| MELBOURNE AGR. SOCIETY. | | | | | | | |
| *Judges — Jas. Boyd, Pickering, R.R.2; W.J.W.Lennox, Toronto* | | | | | | | |
| H. A. Fletcher, Melbourne, R.R. 2..... | Banner ..... | 87 | 91 | 52.2 | 36.4 | 88.6 | 14 |
| W. P. Corneil, Appin..... | do ..... | 88 | 82 | 52.8 | 32.8 | 85.6 | |
| G. Hyndman, Melbourne..... | do ..... | 86½ | 82 | 51.9 | 32.8 | 84.7 | 15, 14 |
| Donald Johnson, do R.R. 1 | do ..... | 85 | 70 | 51 | 28 | 79 | 15, 14 |
| Arch. Johnson, do ..... | do ..... | 82½ | 69 | 49.5 | 27.6 | 77.1 | 14, 15 |
| M. McNeil, do ..... | do ..... | 83 | 64 | 49.8 | 25.6 | 75.4 | 15, 7 |
| Neil Johnson, do ..... | do ..... | 76½ | 65 | 45.9 | 26 | 71.9 | 15, 14 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| MIDDLESEX.—*Continued.* | | [100] | [100] | | | | |
| MOSA AND EKFRID AGR. SOCIETY. | | | | | | | |
| *Judges — Jas. Boyd, Pickering, R.R. 2; W.J.W. Lennox, Toronto* | | | | | | | |
| Robt. Campbell, Alvinston | O. A. C. 72 | 89½ | 94 | 53.7 | 37.6 | 91.3 | 15 |
| A. McDonald, Glencoe | do | 90½ | 90 | 54.3 | 36 | 90.3 | 15, 12 |
| D. C. McTavish, Walkers | do | 85 | 90 | 51 | 36 | 87 | 15, 14 |
| Chas. Gould, Glencoe | do | 86½ | 87 | 51.9 | 34.8 | 86.7 | 15 |
| D. W. Gillies, do | do | 86 | 78 | 51.6 | 31.2 | 82.8 | 15 |
| Wm. McCutcheon, do | do | 84½ | 65 | 50.7 | 26 | 76.7 | 15, 14 |
| D. Leitch, Walkers | do | 89 | 58 | 53.4 | 23.2 | 76.6 | 10, 14 |
| ONTARIO. | | | | | | | |
| SCOTT AGR. SOCIETY. | | | | | | | |
| *Judges—Cecil H. Walsh, Port Hope; T. G. Raynor, Ottawa.* | | | | | | | |
| Jas. A. Smith, Sandford | O. A. C. 72 | 94½ | 98 | 56.7 | 39.2 | 95.9 | 2, 15 |
| W. J. Rynard, Zephyr | do | 94 | 96 | 56.4 | 38.4 | 94.8 | 15 |
| R. Blackburn, Uxbridge, R.R. 2 | do | 90½ | 87½ | 54.3 | 35 | 89.3 | 15 |
| H. Keller, Zephyr | do | 86½ | 91 | 51.9 | 36.4 | 88.3 | 15, 11 |
| Fred Feasby, Uxbridge, R.R. 2 | do | 90 | 84½ | 54 | 33.8 | 87.8 | 2, 15 |
| Robt. J. Hillier, Zephyr | do | 89½ | 71 | 53.7 | 28.4 | 82.1 | 1 |
| W. J. Weldon, Uxbridge, R.R. 2 | do | 88 | 72½ | 52.8 | 29 | 81.8 | 15, 1, 4 |
| Thos. Sellers, Zephyr | do | 93½ | 63½ | 56.1 | 25.4 | 81.5 | 15 |
| Amos Snowdon, do | do | 87 | 71½ | 52.2 | 28.6 | 80.8 | 1, 15 |
| J. H. Lockie, do | do | 88½ | 67½ | 53.1 | 27 | 80.1 | 1 |
| D. Meyers, do | do | 86 | 62 | 51.6 | 24.8 | 76.4 | 15, 2, 4, 1, 11 |
| G. N. Harrison, Uxbridge, R.R. 2 | do | 78½ | 72 | 47.1 | 28.8 | 75.9 | 4,2,1, 15 |
| E. O. Moore, do R.R. 1 | do | 89 | 49½ | 53.4 | 19.8 | 73.2 | 10,15,1,2 |
| OXFORD. | | | | | | | |
| SOUTH NORWICH AGR. SOCIETY. | | | | | | | |
| *Judges—H. L. Tisdale, Brampton; W. J. W. Lennox, Toronto.* | | | | | | | |
| J. L. Oatman, Tillsonburg, R.R. 3 | Banner | 86 | 88 | 51.6 | 35.2 | 86.8 | 15 |
| Alex. Moore, La Salette, R.R. 2 | do | 89 | 81 | 53.4 | 32.4 | 85.8 | 14, 15 |
| Chas. E. Bell, Otterville | do | 90½ | 76 | 54.3 | 30.4 | 84.7 | 15 |
| J. W. Monk, do R.R. 1 | do | 88½ | 50 | 53.1 | 20 | 73.1 | 15 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | †Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| PARRY SOUND. | | [100] | [100] | | | | |
| STRONG AGR. SOCIETY. | | | | | | | |
| *Judges—Arch. Greer, Mansfield, R.R. 1; W. J. W. Lennox, Toronto* | | | | | | | |
| Thos. Hodgson, Pearceley | Banner | 83 | 95 | 49.8 | 38 | 87.8 | 2 |
| Jas. Prior, Scotia | do | 79½ | 94 | 47.7 | 37.6 | 85.3 | |
| Jno. Wilson, Sundridge, R.R. 2. | do | 81½ | 90 | 48.9 | 36 | 84.9 | 10, 2 |
| Thos. Hornibrook, do | do | 84 | 63 | 50.4 | 25.2 | 75.6 | |
| Sam'l McGirr, do | do | 79 | 70 | 47.4 | 28 | 75.4 | 11 |
| Jno. Paget, do R.R. | do | 80½ | 65 | 48.3 | 26 | 74.3 | 10 |
| RAINY RIVER. | | | | | | | |
| RAINY RIVER VALLEY AGR. SOCIETY. | | | | | | | |
| *Judges—M. F. Cook, Dryden; T. G. Raynor, Ottawa.* | | | | | | | |
| V. H. McCool, Devlin | Banner | 90 | 90 | 54 | 36 | 90 | |
| A. J. Leveridge, do | do | 86 | 87 | 51.6 | 34.8 | 86.4 | 15 |
| Chas. Fisher, Emo | do | 89 | 71 | 53.4 | 28.4 | 81.8 | 15, 2 |
| Wm. Hamilton, Big Fork | do | 84 | 71 | 50.4 | 28.4 | 78.8 | 15, 2 |
| Wm. Jewel, do | do | 88 | 58 | 52.8 | 23.2 | 76 | |
| Jas. Hastie, Sr., Fort Frances. | do | 85 | 56 | 51 | 22.4 | 73.4 | 2 |
| RUSSELL. | | | | | | | |
| RUSSELL AGR. SOCIETY. | | | | | | | |
| *Judges—Geo.R. Bradley, Ottawa; T. G. Raynor, Ottawa.* | | | | | | | |
| H. T. Boyd, Russell | Banner | 88.5 | 71 | 53.1 | 28.4 | 81.5 | 2 |
| H. F. Carscadden, do | do | 87.5 | 68 | 52.5 | 27.2 | 79.7 | 12 |
| J. H. Tweed, do | do | 83.5 | 72.5 | 50.1 | 29 | 79.1 | 10 |
| J. R. Morrow, do | do | 88 | 65 | 52.8 | 26 | 78.8 | 2 |
| A. L. Brunton, do | do | 81 | 72 | 48.6 | 28.8 | 77.4 | 2, 10 |
| E. A. Hamilton, do | do | 82 | 63 | 49.2 | 25.2 | 74.4 | 12, 2, 15 |
| Duncan Cummings, do | do | 79.5 | 63 | 47.7 | 25.2 | 72.9 | 2 |
| A. A. Walker, do | do | 84.5 | 52 | 50.7 | 20.8 | 71.5 | 2 |
| Jos. Eadie, do | do | 80.5 | 57.5 | 48.3 | 23 | 71.3 | 2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

# RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

## OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| VICTORIA. | | [100] | [100] | | | | |
| FENELON AGR. SOCIETY. | | | | | | | |
| *Judges—D. J. Gibson, Bowmanville; T. G. Raynor, Ottawa.* | | | | | | | |
| Jno. Lean, Cameron, R.R. 2 | O. A. C. 72 | 92 | 94.5 | 55.2 | 37.8 | 93 | 13 |
| Chas. Walker, Fenelon Falls | do | 91.5 | 95 | 54.9 | 38 | 92.9 | |
| Wm. J. Gillis, do | do | 87.5 | 93 | 52.5 | 37.2 | 89.7 | |
| C. H. Flett, do | do | 83 | 92.5 | 49.8 | 37 | 86.8 | 15 |
| J. H. Stroud, Cameron, R.R. 2 | do | 84 | 90.5 | 50.4 | 36.2 | 86.6 | 15 |
| W. Hetherington, Fenelon Falls | do | 89.5 | 75 | 53.7 | 30 | 83.7 | |
| Josiah Flett, do | do | 85.5 | 79.5 | 51.3 | 31.8 | 83.1 | 13, 15 |
| Jno. Webster, Woodville, R.R. 3 | do | 77 | 65 | 46.2 | 26 | 72.2 | 2 |
| VERULAM AGR. SOCIETY. | | | | | | | |
| *Judges—H. E. Redner, Rednersville; T. G. Raynor, Ottawa.* | | | | | | | |
| Ross Kimble, Bobcaygeon | Banner | 93¼ | 90 | 55.95 | 36 | 91.95 | 15 |
| G. Kennedy, do | do | 93 | 89.5 | 55.8 | 35.8 | 91.6 | 13 |
| H. Seymour, do | do | 92¾ | 84.5 | 55.65 | 33.80 | 89.45 | 4, 15 |
| R. E. Thurston, do | do | 89.5 | 86.5 | 53.7 | 34.6 | 88.3 | 4 |
| Thos. H. Martin, do | do | 87¾ | 81.5 | 52.65 | 32.6 | 85.25 | 15 |
| Alex. Mitchell, do | do | 90 | 76 | 54 | 30.4 | 84.4 | 13, 4, 15 |
| Jas. McOliver, Nogies Creek | do | 84.5 | 84 | 50.7 | 33.6 | 84.3 | 15, 11, 4 |
| R. T. Robertson, Dunsford | do | 88.5 | 63.5 | 53.1 | 25.4 | 78.5 | 4, 15, 11 |
| Geo. W. Bick, Bobcaygeon | do | 87.5 | 63.5 | 52.5 | 25.4 | 77.9 | 4, 15, 13 |
| R. Watts, do | do | 92 | 53.5 | 55.2 | 21.4 | 76.6 | 4, 10, 15 |
| C. H. Thurston, Dunsford | do | 84 | 65 | 50.4 | 26 | 76.4 | 15, 2 |
| C. Taylor, Bobcaygeon | do | 86.5 | 57.5 | 51.9 | 23 | 74.9 | 15 |
| WATERLOO. | | | | | | | |
| SOUTH WATERLOO AGR. SOCIETY. | | | | | | | |
| *Judges—Geo. E. Foster, Honeywood; W. J. W. Lennox, Toronto* | | | | | | | |
| Geo. R. Barrie & Son, Galt, R.R. 7 | Banner | 92¾ | 81 | 55.65 | 32.4 | 88.05 | |
| Wm. Copeland, Ayr, R.R. 2 | do | 93.5 | 79 | 56.1 | 31.6 | 87.7 | |
| Thos. D. Cowan, Gal, R.R. 3 | do | 95 | 76 | 57 | 30.4 | 87.4 | |
| W. C. Shaw, Hespeler, R.R. 2 | do | 92 | 80 | 55.2 | 32 | 87.2 | 15 |
| R. E. Cowan, Galt, R.R. 3 | do | 91 | 75 | 54.6 | 30 | 84.6 | 9, 15 |
| J. B. Cowan, do R.R. 7 | do | 88 | 79 | 52.8 | 31.6 | 84.4 | |
| J. Brown & Sons, do Box 423 | do | 84 | 78 | 50.4 | 31.2 | 81.6 | 10 |
| E. S. Shantz, Hespeler, R.R. 2 | do | 75 | 86 | 45 | 34.4 | 79.4 | 2 |
| Geo. P. Moore, Galt, R.R. 7 | do | 90 | 61 | 54 | 24.4 | 78.4 | 14 |
| Wm. Brown, do | do | 83½ | 70 | 50.1 | 28 | 78.1 | 15, 10 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | †Weeds in competitors' field. |
|---|---|---|---|---|---|---|---|
| WELLAND. | | [100] | [100] | | | | |
| BERTIE AGR. SOCIETY. | | | | | | | |
| *Judge—J. N. McGill, Millbrook.* | | | | | | | |
| M. W. Sexsmith & Son, Ridgeway, R.R. 1 | O. A. C. 72 | 89.5 | 88 | 53.7 | 35.2 | 88.9 | 15 |
| Wm. Woehl, Bridgeburg, R.R.1 | do | 90.5 | 86 | 54.3 | 34.4 | 88.7 | |
| Geo. W. Miller, Stevensville, R.R. 2 | do | 88.5 | 88 | 53.1 | 35.2 | 88.3 | 15 |
| J. R. Phillips, Fort Erie, R.R. 1 | do | 85 | 89 | 51 | 35.6 | 86.6 | 15 |
| Chas. R. Baxter, do | do | 87.5 | 84 | 52.5 | 33.6 | 86.1 | 15 |
| Jno. L. Curtis, Bridgeburg | do | 83 | 81 | 49.8 | 32.4 | 82.2 | 14 |
| Wm. J. Wale, do R.R. 1 | do | 80 | 85 | 48 | 34 | 82 | 15 |
| E. Miller, Stevensville, R.R. 2 | do | 85.5 | 72 | 51.3 | 28.8 | 80.1 | 15 |
| J. McGaw, Fort Erie | do | 81.5 | 69 | 48.9 | 27.6 | 76.5 | 15 |
| Geo. Mann, Ridgeway | do | 86 | 47 | 51.6 | 18.8 | 70.4 | 15 |
| WELLINGTON. | | | | | | | |
| ARTHUR AGR. SOCIETY. | | | | | | | |
| *Judges—E. I. McLoughry, Markdale; W. J. W. Lennox, Toronto.* | | | | | | | |
| John Bodendistle, Kenilworth | Banner | 75 | 70 | 45 | 28 | 73 | 15, 2 |
| Ed. Crewson, Arthur | do | 71.5 | 74 | 42.9 | 29.6 | 72.5 | 14, 2 |
| CENTRE WELLINGTON AGR. SOCIETY. | | | | | | | |
| *Judges—C. C. Rokeby, Port Rowan; W. J. W. Lennox, Toronto.* | | | | | | | |
| John Lowe, Elora | Banner | 90 | 82 | 54 | 32.8 | 86.8 | 15 |
| R. Cummings, do | do | 87 | 82 | 52.2 | 32.8 | 85 | 15, 4 |
| Jas. L. Benham, Rockwood, R.R. 4 | do | 88.5 | 77 | 53.1 | 30.8 | 83.9 | 2 |
| Adam Wood, Fergus | do | 78 | 77 | 46.8 | 30.8 | 77.6 | 1, 4, 2 |
| R. Caldwell, Nichol | do | 83.5 | 62 | 50.1 | 24.8 | 74.9 | 2 |
| A. Lindsay, Fergus | do | 86.5 | 54 | 51.9 | 21.6 | 73.5 | 2, 4 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| WELLINGTON.—*Continued.* | | [100] | [100] | | | | |
| PUSLINCH AGR. SOCIETY. | | | | | | | |
| *Judges—C. C. Rokeby, Port Rowan; W. J. W. Lennox, Toronto.* | | | | | | | |
| Jno. Winer, Guelph, R.R. 3 | Banner | 95 | 96 | 57 | 38.4 | 95.4 | 15 |
| Wm. Winer, do | do | 94.5 | 96 | 56.7 | 38.4 | 95.1 | |
| Jno. A. Cockburn & Sons, Puslinch, R.R. 1 | do | 93.5 | 97 | 56.1 | 38.8 | 94.9 | |
| Jas. & G. W. Barclay, Guelph, R.R. 6 | do | 92.5 | 94 | 55.5 | 37.6 | 93.1 | 15 |
| O. Rappolt & Son, do R.R. 3 | do | 90.5 | 96 | 54.3 | 38.4 | 92.7 | 15 |
| D. F. Parker, do R.R. 6 | do | 90.5 | 88 | 54.3 | 35.2 | 89.5 | |
| Robt. McCartney & Son, Guelph, R.R. 3 | do | 86.5 | 93 | 51.9 | 37.2 | 89.1 | 2, 15 |
| P. J. McLean & Sons, Puslinch, R.R. 1 | do | 91 | 85 | 54.6 | 34 | 88.6 | 2 |
| A. Scott, do | do | 93 | 65 | 55.8 | 26 | 81.8 | |
| Geo. Henderson, Guelph, R.R. 7 | do | 91.5 | 67 | 54.9 | 26.8 | 81.7 | |
| ROCKWOOD AGR. SOCIETY. | | | | | | | |
| *Judges—Jas. McLean, Richmond Hill; W. J. W. Lennox, Toronto.* | | | | | | | |
| A. F. Auld, Guelph, R.R. 2 | Banner | 97 | 92 | 58.2 | 36.8 | 95 | |
| Jos. Gahan, Rockwood, R.R. 5 | do | 96 | 90 | 57.6 | 36 | 93.6 | |
| T. G. Hutchinson, do R.R. 1 | do | 89¼ | 93 | 53.55 | 37.2 | 90.75 | 2, 15 |
| S. McLean, do R.R. 4 | do | 92½ | 88 | 55.5 | 35.2 | 90.7 | 1 |
| Alex. McCaig, do R.R. 4 | do | 93 | 75 | 55.8 | 30 | 85.8 | |
| Arch. McNabb, do R.R. 4 | do | 92¼ | 73 | 55.35 | 29.2 | 84.55 | 15 |
| G. Kean, Guelph, R.R. 2 | do | 92¾ | 68 | 55.65 | 27.2 | 82.85 | 15 |
| R. R. Rudd & Son, Guelph, R.R. 2 | do | 84 | 75 | 50.4 | 30 | 80.4 | 2, 10 |
| F. Day, Rockwood, R.R. 4 | do | 89¾ | 59 | 53.85 | 23.6 | 77.45 | 1 |
| Robt. Watson, do R.R. 2 | do | 91 | 50 | 54.6 | 20 | 74.6 | 15 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### OATS.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. | ‡Weeds in competitors' fields. |
|---|---|---|---|---|---|---|---|
| WENTWORTH. | | [100] | [100] | | | | |
| BINBROOK AGR. SOCIETY. | | | | | | | |
| *Judges—J. N. McGill, Millbrook; W.J.W. Lennox, Toronto.* | | | | | | | |
| Robt. Young, Glanford, R.R. 1 | Banner | 92 | 65 | 55.2 | 26 | 81.2 | |
| J. I. Fletcher, Hannon, R.R. 1 | do | 92½ | 58 | 55.5 | 23.2 | 78.7 | |
| N. A. Fletcher, do | do | 86½ | 63 | 51.9 | 25.2 | 77.1 | 2, 10 |
| Geo. Daw, Glanford, R.R. 1 | do | 87 | 61 | 52.2 | 24.4 | 76.6 | 14 |
| J. E. Howard, Hannon, R.R. 1 | do | 89½ | 57 | 53.7 | 22.8 | 76.5 | 15 |
| Thos. S. Fletcher, do | do | 84½ | 58 | 50.7 | 23.2 | 73.9 | 4, 15 |
| W. P. Gowland, Glanford, R.R.1 | do | 80½ | 59 | 48.3 | 23.6 | 71.9 | 15 |
| Jas. D. Rose, Blackheath | do | 81 | 58 | 48.6 | 23.2 | 71.8 | 15 |
| Amos Clough, Glanford, R.R. 1 | do | 75½ | 65 | 45.3 | 26 | 71.3 | 15, 2 |

### SPRING WHEAT.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| RENFREW. | | | | | | | |
| RENFREW AGR. SOCIETY | | | | | | | |
| *Judges—J. N. Sorley, Ottawa; T. G. Raynor, Ottawa.* | | | | | | | |
| G. McIntyre, Renfrew | Marquis | 87 | 86.5 | 52.2 | 34.6 | 86.8 | |
| W. Galbraith, do R.R. 3 | do | 81.5 | 89 | 48.9 | 35.6 | 84.5 | |
| Jas. L. Millar & Son, Glasgow Sta. | do | 87.5 | 78 | 52.5 | 31.2 | 83.7 | |
| P. Hamilton, Renfrew, R.R. 1 | do | 73.5 | 94.5 | 44.1 | 37.8 | 81.9 | 4 |
| R. B. Leitch, do R.R. 3 | do | 76 | 84.5 | 45.6 | 33.8 | 79.4 | 2, 1 |
| T. W. Frood, Box 208, Renfrew | do | 75 | 82 | 45 | 32.8 | 77.8 | 15 |
| X. Plaunt, Northcote | do | 82 | 53.5 | 49.2 | 21.4 | 70.6 | 1, 15 |

NOTE.—The figures in brackets at the top are maximum possible scores.

# RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

## CORN.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60 % of Field Scores. | 40 % of Bin Scores. | Totals of Scores. |
|---|---|---|---|---|---|---|
| **ESSEX.** | | [100] | [100] | | | |
| ESSEX AGR. SOCIETY. | | | | | | |
| *Judges—Lee Cascadden, Aylmer; W. J. W. Lennox, Toronto.* | | | | | | |
| Jno. Wallace, Woodslee | Bailey | 92¾ | 95 | 55.65 | 38 | 93.65 |
| Darcy E. Bondy, Arner, R.R. 1 | do | 90 | 96 | 54 | 38.4 | 92.4 |
| W. Hedrick, Woodslee, R.R. 4 | do | 88 | 96.5 | 52.8 | 38.6 | 91.4 |
| J. J. Totten, S. Woodslee, R.R. 2 | do | 91¼ | 91.5 | 54.75 | 36.6 | 91.35 |
| W. G. Sellars, Amherstburg | do | 94 | 87 | 56.4 | 34.8 | 91.2 |
| C. Johnson, Kingsville | do | 90.5 | 86.5 | 54.3 | 34.6 | 88.9 |
| A. E. Bailey, Arner, R.R. 1 | do | 92.5 | 83 | 55.5 | 33.2 | 88.7 |
| Geo. W. Switzer, Essex | do | 91 | 81 | 54.6 | 32.4 | 87 |
| Ed. Simon, Woodslee, R.R. 4 | do | 85.5 | 76.5 | 51.3 | 30.6 | 81.9 |
| P. Malott, Kingsville | do | 88¼ | 59.5 | 52.95 | 23.8 | 76.75 |
| H. N. Warden, Essex, R.R. 4 | do | 86.5 | 56 | 51.9 | 22.4 | 74.3 |
| **KENT.** | | | | | | |
| ORFORD AGR. SOCIETY. | | | | | | |
| *Judges—W. M. Abraham, Chatham, R.R. 1; W. J. W. Lennox, Toronto.* | | | | | | |
| Ezra F. Clark, Highgate, R.R. 1 | White Cap Y. Dent | 91.5 | 89.5 | 54.9 | 35.8 | 90.7 |
| Wm. Blue, Muirkirk, R.R. 1 | do do | 93¾ | 85 | 56.25 | 34 | 90.25 |
| F. J. McLaren, Highgate, R.R. 1 | do do | 93.5 | 84 | 56.1 | 33.6 | 89.7 |
| Jno. Wootton, Thamesville, R.R. 1 | do do | 92.5 | 85 | 55.5 | 34 | 89.5 |
| Wm. L. Tape, Highgate, R.R. 1 | do do | 92 | 84 | 55.2 | 33.6 | 88.8 |
| Jno. Wade, do R.R. 1 | do do | 93 | 73 | 55.8 | 29.2 | 85 |
| F. W. Scott & Sons, do R.R. 1 | do do | 88 | 78 | 52.8 | 31.2 | 84 |
| Jas. E. Gladstone, do R.R. 2 | do do | 87 | 78 | 52.2 | 31.2 | 83.4 |
| Jno. M. Gosnell, do R.R. 1 | do do | 90.5 | 70 | 54.3 | 28 | 82.3 |
| H. A. Hillman, Bothwell, R.R. 3 | do do | 87.5 | 62 | 52.5 | 24.8 | 77.3 |
| **NORFOLK.** | | | | | | |
| COURTLAND AGR. SOCIETY. | | | | | | |
| *Judges—M. W. Sexsmith, Ridgeway; W. J. W. Lennox, Toronto.* | | | | | | |
| V. McDonald, Tillsonburg, R.R. 1 | Golden Glow | 91.5 | 82 | 54.9 | 32.8 | 87.7 |
| G. A. Ronson, Courtland | do | 89 | 75 | 53.4 | 30 | 83.4 |
| R. G. Herron, do R.R. 2 | do | 92 | 66 | 55.2 | 26.4 | 81.6 |
| I. Atkinson, do | do | 92¾ | 63 | 55.65 | 25.2 | 80.85 |
| J. C. Byerlay, do R.R. 2 | do | 90 | 56.5 | 54 | 22.6 | 76.6 |
| O. C. Buchner, do | do | 88½ | 54.5 | 53 | 21.8 | 74.8 |
| F. Lovell, do | do | 87 | 45 | 52.2 | 18 | 70.2 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. |
|---|---|---|---|---|---|---|
| ALGOMA. | | [100] | [100] | | | |
| CENTRAL ALGOMA AGR. SOCIETY. | | | | | | |
| *Judge—G. C. Chamberlain, Ottawa.* | | | | | | |
| Wm. Fisher, Sault Ste. Marie, R.R. 1 | Green Mountain... | 91 | 97.5 | 54.6 | 39 | 93.6 |
| J. T. Ross, Searchmont..... | do ... | 88 | 88 | 52.8 | 35.2 | 88 |
| G. H. Farmer, Sault Ste. Marie, R.R.2 | do ... | 86⅝ | 84 | 52.05 | 33.6 | 85.65 |
| J. K. Toles, do R.R. 1 | do ... | 78¾ | 86 | 47.25 | 34.4 | 81.65 |
| W. J. Conway, do R.R. 1 | do ... | 77¾ | 81 | 46.65 | 32.4 | 79.05 |
| P. Lethbridge, do R.R. 2 | do ... | 78¼ | 79.5 | 46.95 | 31.8 | 78.75 |
| T. W. Farmer, do R.R. 2 | do ... | 79.5 | 77 | 47.7 | 30.8 | 78.5 |
| F. F. Walton, do Box 63 | do ... | 77 | 73.5 | 46.2 | 29.4 | 75.6 |
| G. Armstrong, do R.R. 1 | do ... | 68 | 87 | 40.8 | 34.8 | 75.6 |
| H. L. Allen, do Box 336 | do ... | 75 | 75 | 45 | 30 | 75 |
| R. M. Moore, do R.R. 1 | do ... | 73.5 | 76 | 44.1 | 30.4 | 74.5 |
| G. P. Holmberg, do R.R. 1 | do ... | 72.5 | 74.5 | 43.5 | 29.8 | 73.3 |
| Geo. Nixon, do R.R. 1 | do ... | 70.5 | 77.5 | 42.3 | 31 | 73.3 |
| R. F. White, do R.R. 2 | do ... | 69.5 | 78 | 41.7 | 31.2 | 72.9 |
| C. W. Egglesfield, do R.R. 2 | do ... | 72 | 74 | 43.2 | 29.6 | 72.8 |
| Henry Knight, do R.R. 1 | do ... | 74.5 | 68.5 | 44.7 | 27.4 | 72.1 |
| Geo. W. Hill, do R.R. 1 | do ... | 71 | 69.5 | 42.6 | 27.8 | 70.4 |
| THUNDER BAY. | | | | | | |
| WEST ALGOMA AGR. SOCIETY. | | | | | | |
| *Judge—E. N. Buckley, Guelph; G. C. Chamberlain, Ottawa.* | | | | | | |
| W. J. Edmunds, Dorion Stn..... | Carman No. 1..... | 94 | 94.5 | 56.4 | 37.8 | 94.2 |
| Jas. Wilson, Port Arthur..... | do ..... | 93¼ | 91.5 | 55.95 | 36.6 | 92.55 |
| M. Kenny, Dorion Stn..... | do ..... | 88 | 92.5 | 52.8 | 37 | 89.8 |
| J. R. Hutchinson, Fort William, R.R. 1 | do ..... | 88¼ | 89¾ | 52.95 | 35.9 | 88.85 |
| J. M. Belrose, Box 345, Port Arthur | do ..... | 90 | 85 | 54 | 34 | 88 |
| Thos. McNicoll, Box 161, do | do ..... | 86.5 | 90 | 51.9 | 36 | 87.9 |
| H. Cork, General Delivery, do | do ..... | 85 | 90.5 | 51 | 36.2 | 87.2 |
| C. Hanna, Slate River..... | do ..... | 82¾ | 87 | 49.65 | 34.8 | 84.45 |
| E. T. Ross, 72 Balsam St., Port Arthur | do ..... | 86¾ | 77 | 52.05 | 30.8 | 82.85 |
| Jno. Otway, 201 Southern Ave., Fort William..... | do ..... | 83¼ | 81.5 | 49.95 | 32.6 | 82.55 |
| Ed. Edmunds, Dorion..... | do ..... | 79¾ | 83 | 47.85 | 33.2 | 81.05 |
| S. Belanger, Baird..... | do ..... | 75¼ | 80.5 | 45.15 | 32.2 | 77.35 |
| Thos. Hughes, Murillo..... | do ..... | 80¼ | 70.5 | 48.15 | 28.2 | 76.35 |
| Jas. A. Taylor, Box A, Port Arthur.. | do ..... | 68¾ | 77.5 | 41.25 | 31 | 72.25 |

NOTE.—The figures in brackets at the top are maximum possible scores.

## RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

### POTATOES.

| Competitors in Order of Merit. | Name of variety. | Field Scores. | Bin Scores. | 60% of Field Scores. | 40% of Bin Scores. | Totals of Scores. |
|---|---|---|---|---|---|---|
| WELLAND. | | [100] | [100] | | | |
| FENWICK AGR. SOCIETY. | | | | | | |
| *Judges—R. F. Crossgrove, Sudbury; G. C. Chamberlain, Ottawa.* | | | | | | |
| Jos. M. Leppert, Fenwick | Green Mountain | 92.5 | 89.5 | 55.5 | 35.8 | 91.3 |
| M. Stirtzinger, do R.R. 5 | do | 89¼ | 93.5 | 53.55 | 37.4 | 90.95 |
| J. L. Stirtzinger, do | do | 89.5 | 88 | 53.7 | 35.2 | 88.9 |
| C. F. Haist, Ridgeville, R.R. 1 | do | 85 | 85.5 | 51 | 34.2 | 85.2 |
| J. M. Haist, do | do | 82¼ | 88 | 49.35 | 35.2 | 84.55 |
| J. H. Haist, Fenwick, R.R. 5 | do | 81.5 | 87.5 | 48.9 | 35 | 83.9 |
| Geo. W. Haist, Box 867, Fonthill | do | 83¾ | 84 | 50.25 | 33.6 | 83.85 |
| Daniel Haist, Ridgeville, R.R. 1 | do | 82 | 82.5 | 49.2 | 33 | 82.2 |
| A. E. Howell, Fenwick, R.R. 5 | do | 79 | 86 | 47.4 | 34.4 | 81.8 |
| Geo. Kappler, do | do | 77¾ | 86.5 | 46.65 | 34.6 | 81.25 |
| Clement Bros., do | do | 80.5 | 78.5 | 48.3 | 31.4 | 79.7 |
| Jno. L. Haist, Ridgeville | do | 77 | 83.5 | 46.2 | 33.4 | 79.6 |
| W. R. Hall, Fenwick, R.R. 5 | do | 78.5 | 80.5 | 47.1 | 32.2 | 79.3 |
| A. E. Haist, do | do | 77.5 | 80 | 46.5 | 32 | 78.5 |
| J. H. Beamer, Ridgeville, R.R. 1 | do | 66 | 81 | 39.6 | 32.4 | 72 |

NOTE.—The figures in brackets at the top are maximum possible scores.

# STANDING FIELD CROP COMPETITIONS

## ONTARIO DEPARTMENT OF AGRICULTURE

### 1. SCORING FOR YIELD

The following are the standards of yields per acre adopted at Guelph and Ottawa for the different crops to be judged in Ontario:

| Crops | Bushels per acre. | Number of bushels below standard for each point dropped. |
|---|---|---|
| Oats | 70 | 10 |
| Barley | 50 | 10 |
| Corn | 60 | 10 |
| Winter Wheat | 40 | 5 |
| Spring Wheat | 35 | 5 |
| Field Peas | 30 | 5 |
| Beans | 25 | 5 |
| Potatoes, early | 250 | 25 |
| " late | 350 | 25 |
| " New Ontario | 400 | 25 |
| Mangels | 700 | 75 |
| Turnips | 700 | 75 |

### 2. STANDARD VARIETIES OF GRAIN AND POTATOES.

In order to encourage selection of the best varieties of grain and potatoes, it has been decided that Societies entering the Field Crop Competitions should select from the following standard varieties:

Fall Wheat—Dawson's Golden Chaff (white), Imperial Amber (red), O.A.C. No. 104.

Spring Wheat—Marquis, Red or White Fife, Wild Goose, Huron.

Oats—O.A.C. No. 72, Banner, Abundance, Granary Filler, Yellow Russian, Gold Rain.

Barley—O.A.C. No. 21 Mandscheuri.

Peas—Golden Vine, Canadian Beauty (White Marrowfat), Arthur.

Beans—Pea.

Corn (Dent)—Wisconsin No. 7, White Cap Yellow Dent, Bailey, Golden Glow.

Corn (Flint)—North Dakota, Longfellow, Quebec Yellow.

POTATOES—EARLY OHIO GROUP (EXTRA EARLY)—Early Ohio, White Ohio, Early Six Weeks.

IRISH COBBLER GROUP (EARLY)—Irish Cobbler, Early Eureka, Extra Early Eureka, Flourball, Early Standard.

GREEN MOUNTAIN GROUP (MEDIUM)—Green Mountain, Carman No. 1, Gold Coin, Delaware, Farmer, White Mountain, Clyde, Freeman.

RURAL GROUP (LATE)—Dooley, Carman No. 3, Noxall, Comet, Roxborough, Sir Walter Raleigh, Rural New Yorker 2, Davies Warrior.

Many of the names in the different groups above are practically of one type and variety, and consequently are rightly classed together.

This does not prohibit the use of any other variety than those named, but, when the judge is scoring a field, if any other variety than the above-named standard ones is grown, two points will be deducted from the total score.

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## 3. WEEDS IN CEREALS.

### CLASS 1.

1. Wild Oats.
2. Perennial Sow Thistle.
3. White Cockle.
4. Wild Mustard.
5. Hare's Ear Mustard.
6. Ball Mustard.
7. Penny Cress.
8. False Flax.
9. Twitch Grass.
10. Bladder Campion.
11. Field Bindweed.

All weeds in Class 1 are to be scored quite heavily, and Wild Oats and Perennial Sow Thistle the heaviest of all.

If Wild Oats or Perennial Sow Thistle are found going to seed in the crop the following points should be deducted from the total score: One plant, 3 points; two plants, 5½ points; Three plants, 7½ points; Four plants, 9 points; and one point for each of the next six plants, making 15 points cut if as many as ten plants can be found.

### CLASS 2.

12. Wild Tares.
13. Purple Cockle.
14. Curled Dock,
15. Canada Thistle.
16. Chess.
17. Hemp Nettle.

The weeds in Class 2 are to be scored somewhat lighter than those of Class 1.

CLASS 3.—All other weeds scored somewhat less than those of Class 2.

NOTE.—Great care should be taken to name on the Score Cards all the weeds of Class 1 and Class 2 which are found in each field. This is very important.

## 4. POTATOES, MANGELS, TURNIPS AND SUGAR BEETS

### Method of Determining Yield

Each judge is to take with him an outfit for making the determination, including scales or steelyards. If necessary, a set should be purchased for about $1.00, a receipt obtained for the same and the amount included with the travelling expenses.

Each judge is to dig and weigh the potatoes in each of two places in every field examined. The following schedule will assist in making each of the determinations:

| Inches wide. | Feet long |
|---|---|
| 26 | 18 |
| 27 | 16½ |
| 30 | 15 |
| 33 | 13½ |
| 36 | 12 |
| 39 | 11¼ |
| 42 | 10½ |
| 45 | 9¾ |
| 48 | 9 |

Each lot weighed represents yield of 4 square yards. This divided by 4 is the yield of 1 square yard, which multiplied by 4,840 gives the yield in pounds per acre, and when divided by 60 gives the estimated number of bushels per acre. The two lots worked out in this way, when added and divided by 2, give the estimated yield per acre from which the score can be determined.

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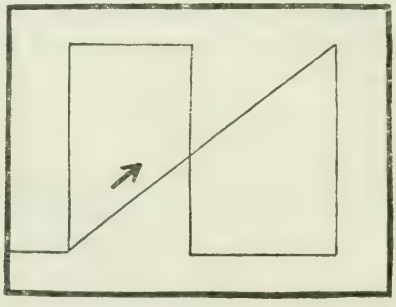
## 5. EVERY JUDGE MUST WALK THROUGH EACH FIELD WHICH HE JUDGES.

The majority of judges favour the following route, supposing the field to be nearly square.



If the field is of a different shape the route should be changed accordingly so as to ensure the whole field being thoroughly examined.

# Ontario Department of Agriculture

SEVENTEENTH ANNUAL REPORT

OF THE

# HORTICULTURAL SOCIETIES

FOR THE YEAR

# 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO.
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1923

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400 Richmond St. W.
TORONTO

To His Honour Henry Cockshutt, Esq.
*Lieutenant-Governor of the Province of Ontario.*

May it Please Your Honour :

I have the honour to present herewith for your consideration the Report of the Horticultural Societies of Ontario for the year 1922.

Respectfully yours,

Manning W. Doherty,
*Minister of Agriculture.*

Toronto, 1923.

# CONTENTS


PAGES

Officers for 1922 ..... 6

Financial Statement ..... 6

Ontario Horticultural Annual Convention ..... 7

President's Address: Rev. W. M. Mackay ..... 7

Report of Superintendent: J. Lockie Wilson ..... 9

Planting and Care of Town and City Home Grounds: F. C. Nunnick ..... 12

Address: Hon. Manning Doherty ..... 13

Nut Culture: J. A. Neilson ..... 16

Successful Growing of Melons, Tomatoes and Asparagus: Harper Secord ..... 26

Bloom from Snow to Snow: Geo. Simpson ..... 31

Address: Rev. W. M. Mackay ..... 35

Address: Hon. E. C. Drury ..... 36

Life History of Mildew: Prof. J. H. Faull ..... 39

Cut Flower Arrangement: G. A. Reid ..... 42

Canadian Council of Horticulture: J. E. Carter ..... 44

Plant Registration: Prof. W. T. Macoun ..... 47

Primulinus Hybrids: H. L. Hutt ..... 51

Notes on the Newer Gladioli: W. E. Saunders ..... 52

Some Further Notes on the Newer Pæonies: Miss Blacklock ..... 54

Hardy Lilies: Miss I. Preston ..... 55

Report of Resolutions Committee ..... 59

Importation of Diseased Bulbs: Wm. Hartry ..... 62

Ideas and Ideals of Horticulture: A. H. MacLennan ..... 62

Report of District Directors ..... 65

Address: Rev. W. A. Cameron ..... 73

Statement of Membership and Legislative Grants ..... 75

Receipts and Expenditures of Societies ..... 78

# ANNUAL REPORT

OF THE

# Horticultural Societies of Ontario

## 1922

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To the Honourable Manning W. Doherty,
*Minister of Agriculture.*

Sir,—Phenomenal, indeed, has been the growth of the Horticultural Societies of Ontario, and for the several preceding years between twenty-five and thirty new Branches have been formed annually. In 1921 the membership was 32,000, which was increased to over 40,000 in the year just closed. It is gratifying to note that a number of Societies have been formed in purely rural sections and the farming communities are catching the spirit of beautification of home surroundings. Applications for organizing Societies in the countryside during 1923 are the most numerous yet recorded.

The Convention held on February 1st and 2nd of this year was the largest and most enthusiastic ever held by this progressive educational organization.

The Financial Statements of the Horticultural Societies of the Province are hereto appended and 1923 promises to be a banner year for the Association.

Faithfully yours,

J. Lockie Wilson,
*Superintendent.*

## OFFICERS AND DIRECTORS, 1923

*President*.....J. P. Jaffray, Galt.
*First Vice-President*.....J. E. Carter, Guelph.
*Second Vice-President*.....Geo. Simpson, Ottawa.
*Secretary and Editor*.....J. Lockie Wilson, Toronto.
*Treasurer*.....C. A. Hesson, St. Catharines.
*Hon. Director*.....Rev. W. M. McKay, Weston.

*Directors:*—District No. 1, F. C. Stone, Prescott; District No. 2, J. A. Middleton, Lindsay; District No. 3, W. F. Bailey, Fort William; District No. 4, Thos. D. Dockray, Toronto; District No. 5, Rev. G. W. Tebbs, Burlington; District No. 6, Wm. Hartry, Seaforth; District No. 7, W. O. Mendel, Elora; District No. 8, Dr. F. E. Bennett, St. Thomas; District No. 9, G. L. Klostermann, Windsor.
*Auditors:* W. J. Evans, Toronto, and Lionel Godson, Toronto.
*Representatives to Royal Agricultural Winter Fair:* J. P. Jaffray, Galt; W. J. Evans, Toronto; Lionel Godson, Toronto.
*Representative to Canadian National Exhibition:* Wm. Fountain, Toronto.
*Representative to Canadian Council of Horticulture:* J. E. Carter, Guelph.

---

## TREASURER'S REPORT FOR 1922

### *RECEIPTS.*

| | |
|---|---|
| Balance as per statement of February 7th, 1922 | $341 99 |
| Affiliation fees, account year 1922 | 152 10 |
| Affiliation fees, account year 1923 | 120 25 |
| Affiliation fees, account arrears | 30 00 |
| Miss Yates, for complimentary banquet tickets | 12 00 |
| Bank interest to 30th November, 1922 | 4 02 |
| Total receipts | $660 36 |

### *EXPENDITURES.*

| | |
|---|---|
| King Edward Hotel, balance due account, banquet | $28 00 |
| Clerical assistance at Convention | 45 00 |
| Caretaker's services at Convention | 10 00 |
| W.A.S. Porter. Music at banquet | 7 00 |
| Honorarium to Secretary, $100.00; to Treasurer, $25.00 | 125 00 |
| G. A. Walkey, officers' and delegates' badges | 44 43 |
| Geo. Shepherd, 200 banquet tickets | 3 25 |
| Dunlops, floral tribute to late W. B. Burgoyne | 30 00 |
| Miss Yates, account services of Miss Graham at Can. Nat. Exhibition | 4 84 |
| Legg Brothers, letters-heads and envelopes | 27 00 |
| Legg Brothers, account printing | 3 25 |
| Pullman fares, directors' visit to Exp. Farm, Ottawa | 34 00 |
| Legislature restaurant, meals at board meeting | 3 80 |
| Bank charges on affiliation cheques | 4 35 |
| Treasurer's account, stationery, 50c., post and war stamps | 4 27 |
| Total expenditure | $374 19 |
| Balance on hand to 30th January | 286 17 |
| | $660 36 |

St. Catharines, January 30th, 1923.

C. A. Hesson,
*Treasurer.*

# ONTARIO HORTICULTURAL ASSOCIATION

## ANNUAL CONVENTION.

The Seventeenth Annual Convention of the Ontario Horticultural Association was held at the King Edward Hotel, Toronto, on February 1st and 2nd, 1923, commencing at 10.00 a.m. Rev. W. M. McKay, B.A., Weston, presided.

## PRESIDENT'S ADDRESS.

Rev. W. M. McKay, Weston.

I welcome you to the privileges and responsibilities of this the 17th Annual Convention of our Association. It must be gratifying to us all to note the phenomenal growth of our Association. In the past three years our paid up membership has more than doubled, each year showing marked increases over preceding ones and prospects ever growing brighter and better. Not only is our growth abundantly visible extensively, it is also clear that we are keeping pace intensively as well. Our ever increasing membership is no longer satisfied with ordinary bloom, we are demanding the very best that may be found in this and foreign lands. Even now we search the ends of the earth for choice varieties in bulb and bud and blade and bloom. We also experiment very extensively and successfully in the increasing number of our public and private trial gardens. Gradually the day of landscape gardening is dawning. Many Societies are showing substantial results in civic improvement and the "Beautification of town, city and rural municipality," may be found as the slogan of scores of our societies.

Much also might be said regarding the activities among our boys and girls. Besides the work carried on directly by our societies operating under the Horticultural Societies Act, we see the School Garden and the School Fair. Whether the results desired are to be realized by the School Garden on the one hand or the Juvenile Community and home garden on the other gives us a problem which in my judgment is yet waiting a solution.

Matters of administration brought your board together on four occasions. Our first meeting was concerned chiefly with the consideration of the resolutions duly passed by our last year's Convention. All received due consideration, and were carried out in so far as your Board had it in its power to do so. The most important was the resolution affecting the finances of our Association. One part had to do with a new schedule of affiliation fees and required an amendment to the Horticultural Societies Act. The other part had reference to securing an increase in our Government grant. In accordance with the resolution, all our Societies were circularized and some 84 reported in favour of the amendment of the Act, while only 4 were opposed. Your Board interviewed the Provincial Cabinet, which was personally represented by the Hon. Mr. Drury, the Premier, and the Hon. Mr. Doherty, the Minister of Agriculture. I regret to say that no results were secured.

The Board met again in Ottawa, the guests of the Ottawa Society and of Mr. and Mrs. George Simpson. By courtesy of this Society and of Prof. Macoun we were shown through the spacious grounds of our Dominion Experimental Farm, and right royally entertained at a luncheon. While in Ottawa, we were made acquainted with the ideas and ideals of a Dominion Council of Horticulture. We had also the privilege of interviewing the Hon. Mr. Motherwell, Federal Minister of Agriculture, who is one of the most ardent horticulturists I have ever met. His assurances were most inspiring. As a result of my interview with Mr. Motherwell and at the request of the members of the Board, I appointed a representative *pro tem.*, in the person of Mr. J. E. Carter, of Guelph, to act on this Council. The convention will hear more about this very important matter.

J. P. Jaffray, Galt, President, Ontario Horticultural Association.

Our worthy Superintendent, Mr. Wilson, and myself for the Board, attended the opening of the first Ontario Gladioli Exhibition at St. Thomas, and came away filled with delight at this another of the tangible evidences of the spirit engendered by our Ontario Horticultural Association.

Our next meeting was one of stock taking and the preparation for our Convention.

Observations from my four years' experiences on the Ontario Board have led me to believe that the keynote of success as well as the glory of our Association in its Province-wide field may be found in the unselfish and voluntary service of our members in the cause of home and community life. We glory in our academic institutions because of the light and leadership they give, we rejoice

in the excellence of our professional standards, but unless such light and leadership, such standards of excellence fire the emotions and create a response in both cottage and castle in city, town and countryside, we have not yet entered into the joy of our inheritance, nor the possibilities of our generation.

Our Societies throughout this Province are able through such voluntary and unselfish service to so impress their value upon our people, our councils and our governments, that the necessary financial assistance will be forthcoming, and results will be secured which money cannot buy.

Referring to the problem of our juvenile department, many honest efforts have been put forth and much money has been expended by the Department of Education and also by the Department of Agriculture with a keen desire to provide the necessary equipment for horticultural education. While much has been done through the School Garden and the School Fair, there are grave doubts in the minds of many that something vital to sound policy is wanting. I cherish the hope that we shall be able not only to consolidate the gains already achieved, but also to discover and apply a policy which will more adequately meet the wishes and conditions of juvenile life.

I have been impressed with the necessity of a Standing Committee on legislation. So long as we function under a Provincial Act and depend upon government financial assistance we shall always need amendments to the Act. By the expressed wishes of the vast majority of our Societies abundantly shown during the past year, various amendments are long due. Provincial Government Grants are vastly better than municipal grants, but they have failed to keep in sight the numerical progress of our paid-up membership. When we see some 40,000 intelligent men and women ready to function in the beautifying of our Province, is it wise on the part of governments to allow chill penury to repress their noble rage and freeze the genial current of their souls ?

There appears to have leaked into the hearts of all nations an inspired tradition that civilization began in a garden. Historians of Christendom agree that the greatest event of all history was enacted in a garden, and multitudes believe the prophet of old when he said, "The wilderness and the solitary place shall be made glad for them and the desert shall rejoice and blossom as the rose," thus giving us a picture of where civilization will arrive. So inspired by the memories of the past and the possibilities for the future, may we continue the work so nobly begun and prove ourselves worthy servants in a noble cause.

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## REPORT OF THE SECRETARY

J. Lockie Wilson, Toronto.

Less than a score of years have passed since a few progressive and energetic citizens met together for the purpose of organizing an Association destined to rank among the highest in the land. In this short period of your existence you have made more rapid progress than any other educational institution in Canada. At your first Convention some 30 delegates were in attendance and the then President congratulated the meeting on having one lady representative present. What a change the years have made! To-day lady delegates outnumber the men. The year just closed has been also in other lines a record breaker. Many delegates who attended our 15th Annual Convention considered that I was a supreme type of optimist when asserting that in 1925 our membership would be 50,000. At the time I made this prediction our paid membership was 17,000. In the following three years the membership had

increased by 65% and in 1921 the latest available complete returns show a total paid enrolment of over 40,000. I was not too optimistic when I stated that our great organization would have a membership of not less than half a hundred thousand in 1925. This, I feel, is assured before that year is numbered with the past. Nor can you boast of progress in membership alone ; but year by year the onward and upward march continues and our motto is to make happy fireside climes for weans and wife, this the true pathos and desire of human life, and to build up towns and cities, and beautiful and vineclad homes on the hillsides and woodlands with their shade trees, and our flower decked gardens till. Your plans for betterment will not, like May blossoms, perish, frost-nipped and wind shaken, but will in the years to come grow and flourish like green bay trees, planted by a river side.

Farmers of Ontario, notwithstanding the fact that a special Act was passed allowing them to form Societies with a minimum of 25 members, instead of 50, are not yet fully imbued with the spirit of our Association which wages an eternal war against ugliness, wherever it rears its grimy head, but, perhaps, declining prices for their products and the increasing struggle to keep the balance on the right side of the ledger, has had a depressing effect on the men who till the soil and on whom depends so much the prosperity of the country. We will yet gather them into our Association, as our aim is, and theirs should be, to exile ugliness and enthrone beauty round every home in Ontario, whether urban or rural.

From the North requests are coming in for information as to the organization of Branches. Farmers living in these newer communities require our help and counsel in the planting of trees and vines and flowers where but yesterday overshadowing the pioneer's homes stood the stately trees, the forest primeval.

The splendid Provincial Highways that are being constructed and over which will pass tens of thousands of tourists in the incoming time, have given an impetus to our work in the towns., villages and rural communities through which they pass, and when the work is completed the scenic beauty of our Province will rival that of any country in the world.

Since we met in Convention last year the number of our Societies has been increased by thirty, making a total of 167. I am pleased to note that the Belleville Society, which had ceased to exist for some time, has been reorganized with a splendid membership of 500. We will all watch with interest the progress of this great revival.

The reports for 1920 showed that the expenditure of the Societies was $92,466, and in 1921 it was $112,131, an increase in one year of nearly $20,000.

We are honoured to-day by representatives of the Ontario Rose Society and the Florists and Gardeners' Association, whom I am sure you will heartily welcome, and to the courtesy and kindness of the Rose Society we are indebted for the floral decorations in this hall.

The formation of the Canadian Council of Horticulture is a move in the right direction, and Mr. Carter, our representative, will report briefly on the object of this organization.

Under the Horticultural Societies' Act in a city of over 200,000 population, three Societies may be organized. The city of Toronto is the only one in the Province that has taken advantage of this ; in fact, this change in the Act was made at the request of some of its citizens. Recently, residents of the St. Clair District have asked that the Act be changed so as to allow an additional Society to be organized in cities of over 200,000. Before the request for a further change in the Act is considered the Department is looking into the advisability of this.

Are the Societies already established in Toronto, with its population of nearly 600,000, taking advantage of the opportunities offered, and are they reaching those who should become interested in the work we all have at heart ? I am not casting any reflection on the many enthusiastic workers in Ontario's capital, but apparently there are not enough of them. I give you the following facts for your consideration : The three Societies established in that city are Toronto, High Park and Riverdale, the memberships of which are as follows, respectively: 534, 549 and 129. The total membership in a city of this size is less than that in the little town of Weston. In cities and towns where one live Society is established a larger number of citizens are reached and a larger number of active workers engaged in the much needed work of civic beautification. Here is the record of membership in a few cities and towns: Chatham, 1,152; London, 1,683; St. Catharines, 1,345; St. Thomas, 2,046; Ottawa, 1,527; Fort William, 1,207; Hamilton, 1,002, and Weston, 1,846. In view of the above facts and figures are you of the opinion that the Department should allow another Society to be added to the already three weak ones, particularly in so far as membership is concerned ? When these three Societies overflow, then, I think, there would be reason for a change in the Act.

Through the generosity of Mr. Carter the Association is being given a splendid set of valuable slides which I am sure will be appreciated by Societies which will use them. These, together with the set we already have on hand, will add materially to the value of addresses given in connection with same.

## In Memoriam

A note of sadness is struck when we look over that long list of our splendid membership who have crossed the Great Divide and who were prominent when your Association was organized. Among the stalwarts who with far-seeing eye dipped into the future when laying the foundation of our Association broad and deep and are now no longer with us, are W. B. Burgoyne, Major Snelgrove, and R. B. Whyte, one time Presidents of our Association, and among the Directors and members who took a prominent part are, Roderick Cameron, H. R. Frankland, Alex. McNeill, J. S. Pearce, Wm. Hunt, Jno. Cavers, W. T. Ross, H. S. Peart and J. Thos. Murphy. These and many others have left a record behind them, and the "Well done, good and faithful servants" is their reward.

In the death of the late J. S. Wallace, the Toronto Society particularly has sustained an irreparable loss. We, too, will miss his counsel and energy. Time like an ever flowing stream bears all our friends away.

Many Municipal Councils are beginning to recognize that Horticultural Societies have been doing, in the past, without any assistance from them, work that these Councils might have carried out themselves in regard to beautfying and improving parks, streets, lawns and public grounds. I am sure that the live Directors of Horticultural Societies will have little difficulty in obtaining substantial grants from these Councils for improvements in which we are all interested. No Horticultural Society should approach a Municipal Council in the initial stages of its work. You have got to show them that you are prepared to accomplished things so that citizens can recognize that valuable work is being accomplished by the energetic members of your Society and your Board. Think what usually happens when a newly organized Society, having read that other municipal bodies had made grants to sister Societies, approached their own Council with a request for a grant. The question would naturally be asked : "What is your Society for ; what are you doing ; what have you done to justify receiving a grant out of the public treasury ?" If you could

not point to some substantial work accomplished in the way of improvement of home surroundings and work for the general benefit and uplift of the community, the Council would be justified in refusing a grant.

Too many members have been induced to join our Societies because of personal benefit only, that they were to receive. If they became members and paid a dollar they expected to get an increased value in bulbs, seeds or plants for their investment. This is the selfish side of the larger ends we have in view.

It is quite true that we cannot improve our own surroundings by planting vines and flowers and maintaining well-kept lawns without materially adding to the value of the neighbourhood. This is where enlightened self-interest is of value to all, but the work of our members must be in the community's interest.

What is to be the effect of your work on the rising generation ? Will its tendency be to degrade or elevate ? Is the idle boy or girl going to be a benefit or a burden to the state ? You have a wonderful work to do for the elevation and uplift of childhood in Ontario. A great responsibility is on us. Are we rising to the occasion ?

We are building stadiums and athletic fields, we are encouraging baseball, hockey, football, cricket and all these so-called manly sports, all good. But, to develop the highest ideals of manhood and womanhood, there must be mixed with that a preparation for the lifework of our children, and what more enjoyable, elevating work could men and women in embryo be engaged in than in devoting a short period of each day to garden work and getting near to nature's heart ? From the children of the schools our ranks in the future must be filled.

Criminal statistics recently issued state that one out of every eight criminals was under twenty years of age. Is this not a matter that should receive the consideration of serious thinking patriotic men and women ? Realizing our responsibilities, then, in this regard should not our life work be to remedy the grievous errors of the past ? Habits of industry acquired in early youth make the child a better citizen.

For sixteen years we have worked together, and during this period only harmony and good-fellowship have prevailed. At our Conventions and on our Board unity of purpose and loyalty to the Association has ever been evident in the wonderful increase in membership and good work accomplished. My heart's desire and yours is, I know, that we may continue as in the past to hold high the torch of rural and civic betterment. Hand in hand and shoulder to shoulder we go forward in the coming year with high hopes and greater inspiration.

---

## PLANTING AND CARE OF TOWN AND CITY HOME GROUNDS.

F. C. Nunnick, Ottawa.

When asked to contribute something to your programme, I was somewhat at a loss to know just what subject to take up. Some of you will perhaps remember that last year I announced from this platform that the Division of Extension of Publicity of the Dominion Experimental Farm had, with the co-operation of Professor Macoun, the Dominion Horticulturist, prepared a set of lantern slides illustrating the planting and care of farm home grounds. Since making that announcement we have sent out sets of slides to over 50 meetings. The announcement was not made until the middle of February ast year, and the set of slides was not quite complete at that time, but even

from then on until the end of the gardening season last spring we were able to send out sets of slides. When we found that these were enthusiastically received by Horticultural Societies in towns and cities, as well as in rural districts, I took a number of photographs and gathered together a number of others, and have, with the assistance of friends, prepared what I shall show you dealing with the planting and care of the town and city home grounds. I have not quite finished the explanatory manuscript that will accompany these, but will show you what is available from your own and any other organizations to interest people in the beautifying and caring of their home grounds.

These slides will be sent out free of charge, we simply ask the users of the slides to pay the express charges one way. It costs about 60 or 65 cents to have a set of these slides sent from Ottawa to Toronto, so the charge is not prohibitive. I have about six duplicate sets. Sometimes last year we had the whole of these sets out. We have twelve sets now, six for rural and six for city districts—so if any of you who are desirous of having a set of slides will address a letter to the Experimental Farm, Ottawa, slides will be sent you, together with a descriptive manuscript and a request to have them promptly returned. (Mr. Nunnick then showed a number of slides by way of explanation.)

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## ADDRESS.

Hon. Manning Doherty, Minister of Agriculture, Toronto.

I am glad that even in passing through these strenuous days the minds of our people can be turned to things that are beautiful. There is no possible system by which the value can be reckoned of inculcating into the minds of the young and of the old, that even though in the hurlyburly of life things may go against one—one may be unfortunate in matters of business, one may be thrust face to face with tremendously serious problems—there is no twist in life that can take away from one the pleasure when one's mind appreciates the beauties of nature that arise on every hand.

There is—I will not admit that there is in this country, although it has been charged—but there is throughout the world, in other countries, a feeling of unrest. It is an undercurrent that is felt from country to country. There have been made many analyses of this and many explanations and many fad propositions as to how it can be remedied. I am not going to attempt to say that there is any remedy, but what I do say is that there will be less of that just in proportion as the lives of the people are made more contented and happy, and I know of no happiness and contentment that is at everybody's disposal like an appreciation of the beauties of flowers cultivated and wild.

The work which this Association is doing in the various municipalities throughout the Province is a grand one. I know that your Superintendent is very highly enthusiastic about the work, as are the citizens in general, and I can assure you that I wish you in your work every success. I hope that you will be able to stimulate in the minds of the people in your various municipalities a desire to have things made beautiful, both in the towns and in the villages, and in the school grounds and all along the line. When I went back to the old homestead one of my first extravagances was to buy a carload of perennial shrubs to put in a border, about 680 feet long and 22 feet wide. It looked like a big undertaking, but I thought it was the least I could do, because I expect that farm to go down to my boy as it came to me through three previous

ancestors, and I know that the two rows of white pines that run down the driveway to the road were planted there by my great-grandfather when he was just ninety years of age; and I felt that if a man of ninety years of age could go to the trouble of doing that, the least I could do when I was at that time considerably less than forty, was to do something on the other side of the grounds so that my boys when they grew up could say: "Daddy thought enough of us to do this." A man ninety years of age could never have expected to see those trees in anything like their present beauty.

You can encourage people, even though their resources are limited. Some say, "It is all right if you have lots of money to do these things!" If you have lots of money you can do many things you cannot do when you have none, as I have experienced many a time in my life when I was short of the needful to carry out my ideas; but no matter what your resources are, there are many things that can be done that are left undone, many attractions can be added to the home with the expenditure of very little money, and your work in inculcating in the people a desire for these things I can assure you is highly appreciated and I wish you every success in your work.

James F. Ault, president of the Ontario Association of Fairs and Exhibitions: We have a paid membership of over 200,000 members, ladies and gentlemen. I extend to your Horticultural Societies greetings from our Association, and I would like to impress upon this Association the very close connection that the Horticultural and the Agricultural Societies have to-day. I have been connected with this Horticultural Convention for some years. There is no other organization that I know of to-day that is doing more towards beautifying our country, towards helping to soothe the tiredness of the people, than the Horticultural Societies are doing. We are desirous of working in co-operation with you. Your hopes and aims are practically ours from an educational standpoint. The rural Horticultural Societies have a great work to do, in trying now to beautify the homes on the farms. We have seen those beautiful pictures this morning, of the beautiful homes and surroundings in the towns and cities. What I would like to see is the farm homes made more beautiful. And I hope that the delegates from the rural Associations will go home with this idea in view, to try to get our farmers interested in this special work. When I was a boy we thought the raising and the cultivation of flowers was a thing for the women to do, but when I look over this splendid gathering to-day I say it is a man's job also.

The Chairman: Three committees are to be appointed, one on Resolutions, the Press Committee and a Nominating Committee. A suggestion has been made to me that in order to save the time of the Convention and facilitate business, delegates from the districts congregate at some time during the day and make suggestions re the district directors to the Nominating Committee.

Moved by Mr. Evans, seconded by Mr. Hartry, Seaforth: "That the Convention ask the delegates from the different districts to get together some time during the day and suggest to the Nominating Committee possible candidates for district directors. Election to be left finally to the Convention." Carried.

Moved by Mr. Evans, seconded by Rev. Mr. Tebbs: "That the Resolutions Committee be seven in number, and be appointed by the Chair, and this also apply to the Nominating Committee." Carried.

L. Godson's garden in old Niagara.

F. A. Kent's beautiful garden at Port Perry.

## COMMITTEES

The following were appointed by the Chairman on the several Committees:

Nominating Committee: J. B. Spencer, Ottawa, Convener; Frank Blain, Fort William; John E. Roxburgh, Norwood; L. Godson, Toronto; H. L. Hutt, Georgetown; Mr. Cutheil, Galt; A. M. Bryson, Otterville.

Committee on Resolutions: J. E. Carter, Guelph, Convener; J. M. Pearen, Weston; J. P. Jaffray, Galt; Frank Bailey, Fort William; W. J. Evans, Toronto; Mr. Motherwell, Ottawa; Mr. Occomore, Guelph.

Press Committee: Mr. J. P. Jaffray and Dr. Bennett.

---

## NUT CULTURE

J. A. Neilson, Guelph

My text is taken from God's wonderful book of nature and reads as follows:

> "Go ye into the highways, fields, hills, dales and byways and plant more and better nut trees for utility and beauty."

The last four words state an ideal which every true horticulturist holds, and one which we are all striving in some way to express. In the paper which I am going to read I want to tell you how I have been trying during the last year and a half to express in a practical way this ideal.

### STATUS OF NUT CULTURE IN THE UNITED STATES AND CANADA

The conservation and improvement of our native nut trees, and the introduction of suitable varieties from foreign lands has not occupied a prominent place in horticultural activities in North America until just recently, except in the Southern and Western United States, where a great deal of interest has been shown during the last twenty years in this phase of horticulture.

In the southern States pecans have been greatly improved and widely planted and in the Pacific Coast region the English or Persian walnut and the almond are extensively grown. As a result of this development large quantities of fine nuts are produced annually and millions of dollars are thereby added to the wealth of the country.

The interest in and the possibilities of nut culture are fortunately not confined to the American South or West. In the Northern and Eastern States and in Canada there is a growing interest in this useful but much neglected branch of horticulture. An example of this commendable movement is seen in the organization and activities of the Northern Nut Growers' Association. This organization was formed in 1909 and is composed of men and women from almost every station of life who are interested in the culture of nut trees and the extension of the use of nuts as articles of human food. At the instigation of members of this association, the State of Michigan has undertaken an extensive programme of nut tree planting along the State highways, and in other northern States good work has been done to encourage people to plant more and better nut trees.

In Ontario comparatively little has been done to improve and plant our valuable nut trees, and unless something is done to interest the public in this movement we will lose a golden opportunity to save for ourselves and posterity the remnant of the fine nut trees which formerly grew so abundantly in some parts of this Province.

Realizing that some action should be taken, an attempt was made in the spring of 1921 to draw the attention of the public to the desirability and possibilities of nut culture. This endeavour was conducted along four main lines:

*First.* A study of the occurrence and distribution of native and introduced nut trees, with special reference to the location of superior species.

*Second.* Introduction of new varieties from foreign lands for test purposes.

*Third.* Improvement of poor or ordinary trees by top-grafting with scions of superior trees.

*Fourth.* Educational work by means of lectures to students, horticultural societies, women's institutes and other organizations, and also by articles for the press.

Our survey for nut trees was carried on by means of a questionnaire which was sent to officers of Horticultural and Agricultural Societies, Agricultural Representatives, School Inspectors, Horticultural and Agricultural journals, newspapers and field trips.

A copy of the letter and questionnaire are given herewith for the benefit of those who did not have an opportunity of reading the original:

ONTARIO AGRICULTURAL COLLEGE, DEPARTMENT OF HORTICULTURE.

We are investigating the possibilities of nut culture and would be pleased to have you assist us by giving information regarding the occurrence of the various species of native and introduced nut trees in your district. We desire especially to learn of the exact location of superior specimens of any of the species named in the following questionnaire and if we are fortunate enough to locate trees that produce large crops of high quality nuts we plan to have these propagated and distributed for test purposes.

Please fill out the enclosed questionnaire and return to the undersigned at your earliest convenience.

Thanking you in anticipation of receiving some interesting information regarding nut trees, I am,

Yours sincerely,

(Signed) Jas. A. Neilson,
*Lecturer in Horticulture.*

QUESTIONNAIRE

1. Are any of the following kinds of trees growing in your locality :

| | |
|---|---|
| American Black Walnut | European Chestnut |
| Japanese Walnut | Japanese Chestnut |
| English Walnut | Beechnut |
| Chinese Walnut | Hazelnut |
| Butternut | Filbert |
| Hickory nut | Sweet Chestnut |
| Pecans | Chinese Chestnut |

2. Do you know of any individual trees of the above mentioned kinds that are superior because of large size of nuts, good flavour of kernel, thin shells, rapid growth or high yields ? Please give exact location of such trees.

3. Is any one in your section making an effort to grow any native or foreign species of nuts? If so, please give their name and address.

Name of Correspondent.....

Post Office.....

Township.....

County.....

Province.....

A large number of replies were received which furnished us with some valuable data on the occurrence and distribution of native and introduced nut trees. Moreover, these replies showed that many people were keenly interested in the culture of nut trees and heartily approved of my venture.

DESCRIPTION AND GEOGRAPHICAL DISTRIBUTION OF NUT TREES IN ONTARIO

The chief native nut trees are the Black Walnut, White Walnut or Butternut, the Hickory, of which there are four species, the Chestnut, the Beech and Hazel. Of introduced nut trees there are the Persian, Japanese and Chinese Walnuts, European, Japanese and Chinese Chestnuts, Pecans, Filberts and the Turkish Tree Hazel.

*The Black Walnut (Juglans nigra)*

The Black Walnut is one of our finest native trees and is found growing naturally along the north shore of Lake Erie and Lake Ontario and around Lake St. Clair. It has been planted in many other parts of Ontario and does well where protected from cold winds. The tree grows to a large size, often attaining a height of 90 feet and a trunk diameter of 4 feet. When grown in the open it makes a beautiful symmetrical tree, having a large rounded crown with drooping lower branches. Contrary to general belief, the native walnut grows quite rapidly and occasionally bears early. About eighteen years ago I planted several nuts around the buildings and along the roadside on my father's farm. Most of the nuts germinated and some trees have made a rapid growth. The largest tree of the lot measured 37 feet 2 inches tall and had a trunk diameter of 14 inches above just the ground in August last. It began to bear in the sixth year and has borne nuts almost every year since then. The nut is of medium size and of good flavour. Some of the trees from the same planting are almost as large and bear larger and better nuts than the one just described.

Trees which produce large easy-cracking nuts with fine flavoured kernels have been located in the Northern States and are now being propagated extensively as named varieties. The Thomas, Ohio, Ten Eyck and Stabler are some of the best varieties which are now available for planting. The Stabler produces a nut which usually has a one lobed kernel and when the shell is cracked this lobe comes out entire in about 70% of the specimens. Several promising trees have also been found in Ontario, and we are hoping that when our search for good trees is completed the best native sorts will prove to be as good or better than the best named varieties found in the United States.

*The Butternut (Juglans cinera)*

The Butternut or White Walnut is much hardier than the Black Walnut and has a wider distribution in Canada. It is found from New Brunswick westward, throughout Southern Quebec and Ontario to Southern Manitoba. Near Portage la Prairie there is a grove of seventy-seven trees which have grown to a fair size and have borne several crops of good nuts.

The Butternut will grow on a variety of soils, but like the walnut succeeds best on a rich, well-drained loam. The tree sometimes attains a height of 70 feet and a trunk diameter of 3 feet. When growing alone, the trunk often divides into several branches, forming a triangular shaped outline. Like most other trees the butternut varies greatly in productiveness, some trees yielding up to twenty bushels while on others the yield is light. Some superior varieties are now being propagated, and will be available for planting in a short time.

*Japanese Walnuts*

The Japanese Walnut is represented in Ontario by two pure types, Juglans Sieboldiana, the smooth shelled butternut shaped type, and Juglans cordiformis,

or the Heartnut and one hybrid which is a cross between the Sieboldiana and the butternut.

The Sieboldiana and the Cordiformis type are characterized by very rapid growth, early and heavy bearing and marked beauty of form and foliage. These trees are considered by some to be our most beautiful nut trees, and are worthy of much wider planting as ornamental trees alone. They are believed to be hardier than the Black Walnut, having been grown and fruited in regions where the Black Walnut does not thrive. As a nut bearing tree, the Heartnut is the most valuable. The nuts are distinctly heart shaped, have a thin shell, crack easily and contain a kernel of good quality. In the best varieties the kernel can often be removed entire from the shell by a light tap of the hammer. Some superior trees of this species have been located in the northern States, and are now being propagated as named varieties by nurserymen. Of these the Lancaster, Ritchie and Stranger are considered the best so far discovered. Some

Garden at Exhibition Park, Toronto.

very good heartnut trees have been found in Ontario, and plans are being made to propagate these for test purposes. There is an excellent tree on the farm of Mr. A. H. Parker near Islington, Ontario, another equally good one grows on Mr. Bert Scheer's property east of Aldershot, two very nice trees on Mrs. Norah Bullock's place across the road from Sheer's, and two fine trees on Mr. Sylvester Kratz's farm at Jordan Station. One of the trees on Mr. Kratz's place has been planted for twenty-five years, and is approximately two feet in diameter and thirty-five feet tall with a spread of fifty-five to sixty feet from tip to tip of branches.

The hybrid between the butternut and the Sieboldiana form grows even more rapidly than either of the pure Japanese species. On the farm of Alfred Smith, Kerman Avenue, Grimsby, there is a tree growing under rather unfavourable conditions which is about thirty feet tall and ten inches in diameter at the base at seven years of age. Mr. J. J. Kelsey, of Clinton, Connecticut, reports one of these hybrids to be forty-six feet tall at nine years, and states

that trees sometimes bear at three years of age. The hybrid tree appears to be quite hardy, having been grown and fruited at Cap Rouge near Quebec City. The nuts of the hybrid have a fine flavour, but are not so desirable as the heartnut on account of having a thicker shell which does not crack easily. Its extreme rapidity of growth and the beautiful, almost tropical, foliage, however, make it desirable as an ornamental, to say nothing of the nuts, which are as good as the butternut and are borne in much greater profusion.

*The English or Persian Walnut (Juglans regia)*

The English walnut, or the Persian walnut, as it should be called, is found growing in the Niagara District and to a lesser extent in the Lake Erie counties. It is stated on good authority that there are about one hundred of these trees growing in the fruit belt between Hamilton and Niagara Falls. There are several quite large trees in the vicinity of St. Catharines, which have borne good crops of nuts. One of these trees produced nuts of sufficient merit to be included in the list of desirable nuts prepared by C. A. Reed, nut culturist of the United States Department of Agriculture. This variety has been named the "Ontario," and is now being propagated, experimentally, in the United States.

There is a tree about fifteen years old on the farm of Mr. Peter McDiarmid which produces one of the largest and finest English walnuts I have ever seen. The shell is thin, cracks easily and contains a kernel of excellent flavour. This tree is considered very promising, and arrangements are being made to have it propagated. In the vicinity of St. Davids, on the farm of Mr. James Woodruff, there is a fine English walnut tree which produced ten bushels of shelled nuts in one season. This tree is one of the largest of its kind in Ontario. It is about sixty feet tall, has a trunk diameter of three feet at one foot above the ground and a spread of branches equal to its height. Mr. G. Greeniaus, near Clarkson, also has several trees, some of which are bearing well.

The English walnut is not as hardy as the Black walnut, and is adapted only to those sections where the peach can be grown successfully. At present this tree cannot be recommended for any part of Ontario except the Niagara District, the Lake Erie Counties and possibly the district between Toronto and Hamilton, and even there it should not be planted unless it has been grafted or budded on the hardier Black walnut.

*Chinese Walnuts (Juglans regia sinensis)*

The Chinese walnut is being grown experimentally in the northern part of the United States, and has been tried at only one place in Canada, e.g., in the grounds of G. H. Corsan, Islington, Ontario. The tree is hardy at the Arnold Arboretum, Jamaica Plains, Mass., and should be sufficeintly hardy for Southern Ontario. It is believed that the Chinese walnut will prove to be hardier than the English walnut, and it may have an important place amongst nut trees in the northern part of the United States and in southern Canada. The nuts are very large, and have a shell which is thicker than the English walnut, but not nearly so thick or hard as the native Black walnut. The kernel generally has a fine flavour, being almost as good as the English walnut.

Several lots of nuts of this species were obtained from north-west China, and have been distributed quite widely in Ontario for test purposes. From these nuts, trees are now growing at the Ontario Agricultural College, Vineland Experimental Station, Port Dalhousie, Thornhill and Cedar Springs. We hope these little trees will prove to be hardy enough for our climatic conditions, and will produce nuts that are as good as the Persian walnut.

*The Shagbark Hickory (Carya ovata)*

This species is the most valuable of the four native species for the production of nuts. It occurs from south-western Quebec to south-western Ontario, and is found chiefly along Lakes Erie, St. Clair and Ontario and along the St. Lawrence. It reaches a height of fifty to ninety feet and a trunk diameter of three feet. In the open it forms a few short heavy limbs which make an outline resembling an inverted cone. The bark is rough and shaggy and peels off in long strips which curl up at the ends, hence the name Shagbark or Shellbark. The husk surrounding the nut is very thick and is composed of four sections. The nut has a hard shell which may be thin or thick, and contains a kernel which is highly esteemed by many people.

In Norfolk County some excellent trees have been located. One of these grows on the farm of Mr. George Sherk near Carholme, and yields a large nut with a thin shell and a fine sweet kernel. The shell of this nut can be easily cracked with a light tap of the hammer, and may be cracked with the teeth without much difficulty.

Other species of Hickory are: *The Bitternut* (Carya cordiformis), *the Mockernut* (Carya alba), *the Pignut* (Carya glabra)

The Bitternut has the widest range of any of our hickories, being found from Montreal westward to the Georgian Bay and southward to the Great Lakes and the St. Lawrence. When grown alone the tree is rather spreading and open and makes a pretty shade tree. The nut has a very thin shell which cracks easily, but the kernel is valueless as an article of food because of the bitter flavour. This species makes a good stock for grafting with superior types of the shellbark, and offers interesting possibilities in breeding tree crops. Several natural crosses between the bitternut and the shellbark have been found, and some of these are of excellent quality. Some of these crosses are described elsewhere in this paper.

The Mockernut and the Pignut are found in the Niagara District and the Lake Erie Counties. The Mockernut produces a large nut with a very thick shell and sweet kernel. Because of the thick shell it is not usually of much value as a nut tree. A few variations of this species have been found, however, which may prove worth while propagating.

The Pignut produces a nut of variable form and size. The usual shape is oval, but some are found which are pear-shaped, and others again are broader than long. The kernel is also variable, some having a bitter flavour while others again are sweet.

*The Pecan (Carya olivaeformis)*

The Pecan of commerce is a native of North America and is found most abundantly in the Southern and South Western United States and Mexico. A few hardy types have been found in the Northern States. At Burlington, Iowa, there is a large tree which bears good crops of fine nuts, and at Concord, Connecticut, another large tree has been located, but on this one the nuts do not ripen.

It may be somewhat surprising to most people to learn that Pecan trees grow in Ontario. Mr. C. R. James, of Richmond Hill, Ontario, has five trees some of which have occasionally ripened nuts. In 1919 a fully ripened crop was gathered, but since that time the nuts have failed to mature. The largest of these trees is thirty-five feet tall and about sixteen inches in diameter at the base, with a spread of thirty-five feet from tip to tip of branches. The

Pecan requires a longer growing season and more heat units to mature a crop of nuts than are generally found in Ontario, and for this reason we cannot recommend the planting of the pure species. There are, however, a few hybrids between the Pecan and the Bitternut which are promising for northern sections, and it is possible that these natural crosses will be hardy enough for the warmer parts of Ontario at least. If these trees can be grown and fruited successfully in Ontario they will form a valuable addition to our nut-bearing flora.

### *Hybrid Hickories*

A few fine types of hickory of hybrid origin have been located and are now being propagated. The Laney, one of the best of these hybrids, was found in Riverside Cemetery in Rochester, New York. It is believed to be a cross between the Bitternut and the Shagbark. The tree is a large, vigorous, spreading grower, with beautiful foliage, and bears a fairly large nut with a thin shell like the Bitternut and a plump sweet kernel like the Shagbark.

Another good hybrid has been located near Rochester. It is supposed to be a cross between the Kingnut and the Shagbark and is said to possess the characteristic of large size of the Kingnut, with the sweet flavour and thin shell of some of the best Shagbarks. This cross has been named the Carya Dunbarii, in honour of John Dunbar, Assistant Superintendent of Parks at Rochester, New York.

The Fairbanks is another promising hybrid between the Bitternut and the Pecan. The tree grows rapidly, bears a fine large nut with a thin shell and a sweet kernel, and is found in Iowa in regions where the climatic conditions are more trying than those existing in our best tender fruit districts.

### *The Sweet Chestnut (Castanea dentata)*

The Sweet Chestnut is found growing naturally on sandy ridges in that part of Ontario extending from Toronto to Sarnia and southward to Lake Erie. It has been planted outside of its natural range and is doing fairly well. At the Central Experimental Farm, Ottawa, there is a fair sized tree, and near Newcastle and Goderich there are a few fine specimens.

It grows to a large size, sometimes reaching a height of one hundred feet and a diameter of five feet at the base. When grown in the open it forms several heavy branches and makes a broad rounded crown, but when grown in a dense stand it makes a tall, straight tree.

The nuts are borne in a spiny burr which contains from one to three nuts. Some trees have been found which are very productive and bear nuts of large size and fine flavour. The flavour of the native sweet chestnut is superior to all other chestnut species.

The native chestnut is subject to a fatal disease called Chestnut Bark disease. This disease is not known to occur in Ontario, but there is no assurance that it will not eventually appear and, therefore, the planting of this tree is attended with some risk.

### *Exotic Species of Chestnuts*

Inasmuch as very few Chinese, Japanese and European Chestnuts have been planted in Ontario little can be said regarding their suitability for our conditions. Dr. Sargeant reports the Chinese chestnut (Castanea mollissima) as being quite hardy at the Arnold Arboretum. This species produces a large sweet flavoured nut, and the tree is said to be resistant to chestnut bark disease.

The Japanese chestnut (C. crenata) is also quite hardy, but is very susceptible to blight. A few Japanese chestnut trees are growing near Fonthill and have borne some very good crops. The tree is a small spreading grower, bears early, sometimes at three years, and bears heavily.

The European chestnut (Castanea sativa) has been grown successfully at Vineland by Mr. S. H. Rittenhouse. The tree is a low spreading rapid grower and bears at an early age. The nuts are large, have a fairly good flavour and are borne quite abundantly at an early age.

Several Chinese and Japanese chestnut trees, and a few hybrids between the two, were recently obtained from Mr. Peter Bissett of the Bureau of Plant Industry at Washington. Some of these trees will be planted at the Ontario Agricultural College, and the remainder have been sent to the Experimental Stations at Vineland and Ridgetown. We hope these trees will be hardy enough for our climatic conditions, and will furnish us with material for improving our native species.

A Paeony Garden.

*Hazels*

The Hazel family is represented in Ontario by two native species, the common Hazel (Corylus americana) and the beaked Hazel (C. rostrata). The hazel is without a doubt one of our hardiest nut-bearing plants, being found throughout Canada from the Atlantic to the Pacific and as far north as Hudson's Bay and up to the Peace River district. Dr. N. E. Hansen, Professor of Horticulture, College of Agriculture, Brookings, South Dakota, has selected some fine strains from Manitoba. These are now being propagated and widely distributed in the north-western states.

The Filbert (Corylus avellena) has been introduced and some good bushes are now growing and bearing at various points in Ontario. Mr. Graesser, of College

Heights, Guelph, has a few bushes which bore well during the past season. Mr. Walter McCall, of St. Williams, Ontario, has some fine large Kentish cobnut trees which have been bearing well for several years. Some of these trees are almost twenty feet tall and four inches in diameter. Messrs. H. B. McConnell & Son, of Port Burwell, are also growing the Filbert successfully, and regard it as a promising nut plant.

From the results obtained in Ontario by the above mentioned parties, and at Rochester by Messrs. McClennon & Vollertson, it would appear that the best hardy varieties of Filberts could be grown to advantage in many parts of Ontario where they are not now grown.

The Turkish Tree Hazel (C. colurna) is a native of western Asia and southern Europe. In its native land it grows to a height of sixty feet with a wide spread of branches. This tree has been introduced into North America and appears to be quite hardy in northern areas. In Highland Park at Rochester there is a specimen about thirty-five feet tall and fifteen inches in diameter at the base, and on the University Campus, Toronto, Professor R. B. Thompson has a few young trees growing nicely. The nuts are born abundantly in clusters similar to the common hazel, are about as large as some of our small fruited hazels and contain a kernel with a fine flavour. This tree is certainly worthy of a trial as an ornamental, and if a large fruited form could be discovered or produced by crossing with the Filbert it would make an excellent nut tree.

### *The Beech (Fagus grandiflora)*

Next to the Hazelnut, the Beech is the hardiest nut-bearing plant grown in Canada, being found abundantly in the Maritime Provinces, Quebec and throughout Ontario to the west end of Lake Superior.

The Beech grows slowly, and does not bear regularly and hence has been almost neglected by nut culturists. Where other good faster growing trees do not thrive the beech is worthy of planting because of the fine quality of its nuts and beauty of tree.

### *Almonds (Prunus amygdalus)*

The hard shelled Almond is grown to a limited extent in southern Ontario. Mr. R. J. Fleming of Watford, Ontario, has a tree which is yielding well, and Mr. Walter McCall of St. Williams, Ontario, has a fine tree which at three years from planting produced one-half bushel of nuts. The growth of this tree is astonishingly rapid, being about five feet per annum. On suitable soils and in favourable locations the hard shelled almond should be tried in southern Ontario where the peach can be grown satisfactorily.

## Why Nut Trees Should Be Planted

Most people who are interested in the welfare of the country realize that trees generally should be planted in much greater numbers and some believe that it would be desirable to plant trees that serve a three-fold purpose of food, shelter and beauty.

Nut trees yield a valuable food, provide shelter and beautify the landscape, and thus combine beauty with utility. Large quantities of nuts are imported into Ontario every year from foreign countries for which a great deal of money has to be sent out of the country. It is believed that a portion of this demand for nuts could be met by growing a greater number of the best types of native and introduced species.

### Where Nut Trees Might Be Used to Advantage

1. *As Roadside and Street Trees.* Where the soil and the site are suitable, nut trees should form a part of the scheme of beautifying our highways and streets.

2. *Trees for the Home Grounds.* The grounds surrounding many of our homes, both rural and urban, would be more beautiful and productive if planted with some of the best types of native and exotic nut trees.

3. *Steep Hillsides or Other Places.* Areas not easily or profitably cultivated could be very well devoted to nut trees provided the soil was suitable.

4. *As Park Trees.* City and rural parks should certainly have a collection of native nut trees, and some of the hardiest and best exotic species.

5. *As a Commercial Venture.* In the warmest part of the province it might pay to establish, on a small scale, commercial plantations of the best varieties of black walnuts, Japanese walnuts, hickories, blight resistant chestnuts and filberts.

### Kind of Nut Trees to Plant

Nut trees, like fruit trees, are difficult to grow true to type from seed, and hence have to be propagated by budding or grafting. While it is quite true that one may get a very good tree by planting nuts from a desirable tree, it is also true that a considerable proportion of the trees so produced will not be any better or as good as their parent. Because of this uncertainty it is much better to plant budded or grafted trees of superior named varieties.

Inasmuch as nut growing is a comparatively recent development our Ontario nurserymen have not devoted much attention to the propagation of named varieties of nut trees. There is some interest being shown at present, however, and it is hoped that before long there will be a fair supply of the best varieties of native and foreign nut trees available in Ontario. In the meantime those who desire to secure named varieties of nut trees will have to place their orders with nut nurserymen in the United States.

Should the prospective nut culturist not be able to obtain at a moderate figure budded or grafted stock of improved varieties of nuts, then, of course, the only thing to do is to grow seedling trees. As previously stated, some of these may produce very good nuts. If superior trees are found in any lot grown from seed or if an exceptionally fine native tree is known to exist, such trees are useful as a source of scions for improving other trees which are not so desirable. It is a fact, though not generally known, that nut trees may be top-grafted like fruit trees. This task is not as easy to accomplish as is the case in fruit trees, but if the proper methods are followed very good results may be obtained.

### The Vision Beautiful and Practical

In sacred writ there is a passage which reads somewhat as follows:—

"And the young men shall see visions and the old men shall dream dreams."

As a comparatively young man I have a vision of a more beautiful and productive Canada. This vision can be materialized by the planting of thousands of the best nut trees of our own land and from other lands beyond the sea.

You delegates and officers of this society, who represent the ideal of beauty and utility, doubtless share in this vision and I am sure you will do all in your power to bring about this ideal.

I would like to suggest the following programme for your consideration and active co-operation.

1. A continuation of the search for the best trees of the various native and introduced species. Good results have already been obtained, but all of the good trees are not yet located.

2. The introduction on a large scale of the hardiest and best species from other regions of the world where the climatic conditions are similar to ours.

3. Improvement of the various species by plant breeding—nature has shown what can be done in this line—and if man were to assist nature by making numerous crosses of the best species much greater and probably better work could be done.

4. The improvement of poor or ordinary trees by top-grafting with scions or buds of superior trees, offers interesting possibilities which I am sure will appeal to many of you.

In this way you can express in a practical manner the ideal of utility and beauty.

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## SUCCESSFUL GROWING OF MELONS, TOMATOES AND ASPARAGUS.

HARPER SECORD, ST. CATHARINES.

Speaking to you first upon the growing of asparagus. This vegetable is not a general crop, neither is it an easy one to grow without a full knowledge of its habits or requirements, and while a good plantation is always a source of profit, a poor one yields only a disappointment. Once established in the right way, it can last a generation, for it brings early money and a fair annual return. Of about 25 crops which I grow, it is the only one that is reasonably proof against failure. I don't want to discourage you in the very beginning by telling you how far back I feel it is necesssary to go in order to establish this crop on the best foundation. Most growers begin with the plants, not even with the seed, but in the breeding of that seed is my choice.

And while I realize that every prospective asparagus grower has not the opportunity afforded him to select his seed, the same as the one already established in the business has, you can by procuring from a reliable seedman a desired variety or strain, at least become a good beginner. Size, not age, is the prime requisite of a good asparagus plant, and whatever methods we employ to grow that plant we must remember that in order to be maintained in first position on planting day, a well-grown one-year old plant is necessary. When it comes to setting these plants in the permanent bed, we want first of all a good location. My first planting was in considering convenience to the hen-yard, otherwise unsuitable. I don't think much of the hens as bug-hunters anyway. There is no method to their work, and while there may be exceptions to their use, I cannot recommend them.

The next time I took advice from a book, and while at times books are the best company we can find ourselves in, you cannot ask a question of the best of them. The book said: "Plant them 12 inches deep," and I ought to have known that putting those good plants down in the depths of that cold yellow subsoil was more of a grave than a home for them, as it finally proved to be.

Guided by these experiences, when we came to our third and successful bed, we put them about 6 inches deep in straight rows, 4½ feet apart. We ran a furrow, throwing one each way with the two-horse plow, in the bottom of which we followed with the one-horse cultivator, and in this spaced our plants 18 inches, covering at the time about 2 inches.

Subsequent cultivation consisted in the use of the two-horse harrows, which operation just nicely conserved the moisture, killed the weeds and filled those trenches as required. This, supplemented by the use of the one-horse cultivator, levelled the ground by fall. But, whatever else you do during this time, don't forget the bugs. Your asparagus to date represents a lot of hard work and painstaking care, and you simply cannot afford at the critical time to turn your back upon it for 48 hours, and have them ruin it beyond redemption, as they will do. If you must contend with this pest, use arsenate of lead as soon as you have any foliage and spread it very generously.

When it comes to fertilizers, we must remember that this vegetable is the hog of all that family. And while during this first year, down in those trenches is an ideal place to use some commercial fertilizer, or well rotted manure, many different practices and notions exist as to just when is the best time to apply the manure to the permanent bed. Immediately after the cutting season seems

Narcissi in bloom.

to find favour with most growers. I do not know that there is any special merit in this. Besides, midsummer manure is not always so readily available, and other work at this time is sure to be crowding. Just so long as manure equal or in excess of that bed's requirements is used, I do not feel that the time of its application is so important. We must remember that it is the tops we are after, the health and luxuriance of which this year is going to be reflected in next year's cutting of shoots. And for this reason, manure applied in the fall of 1922 could not be expected to give very material results until the cutting season of 1924.

I do not think that asparagus should be the subject of treatment foreign to any other vegetable. It responds to those best conditions of heat, fertility and moisture which govern plant growth in general. Still, we find strange opinions to prevail respecting this vegetable. An Old Countryman who worked for me described the elaborate methods employed in preparing for an asparagus

bed in the Old Land—an excavation was opened up and all the accumulated rubbish put in. I do not think this could do any harm, for besides the elements of fertility bound to be contained in those waste materials, drainage undoubtedly was afforded, and in spite of the fact that this plant is indigenous to the seashore, drainage is necessary.

And this brings us to the question of using salt. Some growers contend that salt is absolutely essential. Salt is beneficial, as it is to most other vegetables. The practice of using salt can be traced to the Old Land, where asparagus is grown in beds and where salt was used perhaps, more than for any other purpose to keep down weeds and grass, otherwise hard to eradicate. Besides the practice of using meat brine on the beds over there carried with it considerable nitrogenous fertilizer.

When it comes to harvesting, cutting asparagus is the sore job. It is the very best plan for all the available help to turn out early each morning and get this job out of the way. Cut it early and get it into the shade and away to market before it gets too hot. And whatever else you do, do not assign as an all-day occupation this cutting of asparagus to some one poor individual. You won't have the best kind of a product by harvesting it that way, and it is a cruel task to keep any one person so long engaged at it.

We cut and put it in 11-quart baskets, the length of the basket's width, leaving all small crooked and otherwise inferior on the ground. The cutting season generally lasts from about May 1st until June 25th, about seven weeks, the appearance of green peas in the market being the signal to cease. According to your market's demand should be your method to supply it. The commercial market expects it in 24 uniform bunches per 11-quart basket. The grocers handle considerable loose by the pound, and the Italian and fruit-stand trade prefer to buy it this way and bunch it to suit themselves. Our own is a select trade in this city and Montreal, and after we grow it as well as we know how, we are very careful to harvest it and put it up and ship it just exactly as they want it. There is good money in well-grown and properly handled asparagus, but a lot that is offered in the market does not appeal to me. Asparagus cut one-third to one-half below the ground, represents in my opinion about that much waste. It is usually tough and bitter, and in the end it is bound to spoil your trade. Some markets demand blanched asparagus, but ours demands it green, and a lot of people ignorant of best practice are supplying neither.

When it comes to cultivation of the permanent bed, our methods are those not usually employed. We never plow nor take the tops off the ground. We just let them stand, and in the late fall and early winter we spread plenty of barnyard manure in among them. The first hot day in April, after the ground is dry, we chop this all up with the disc, and after smoothing it down with the harrows, we cultivate between the rows with a one-horse cultivator during the cutting season. But our most important cultural operation consists in the use of a 5-spaded Clark cut-away disc, adjusted so as to straddle these rows, as often as weed growth in them necessitates its use during the cutting season. This operation covers up and smothers out the weeds in the row as they appear, and while it has to be repeated three or four times, when our cutting season is over we have a clean patch. Besides, we obviate that murderous practice of cutting a bed all to pieces, which under any other system of cultivation seems necessary in order to annihilate that accumulated weed growth of the entire harvest period, a practice representing in destruction the equivalent value of at least one week's growth of asparagus. But this described method of cultivation depends upon width between rows. The only argument in favour of deep

planting seems to be that each succeeding annual crown growth adds about half-an-inch to that of the preceding year, but by giving sufficient space between the rows in the beginning we have ample soil to heap over them in later years, without handicapping them in the beginning by deep planting.

The enemies of asparagus are briefly bugs, rust and quack or twitch grass. The bugs are very bad in hot weather, and must be controlled by systematic cutting and later by poisons. The rust, while it only occasionally occurs with us, is a tough customer, and is best guarded against by the use of rust-resistant varieties. Twitch grass is simply to be kept out and any grower so indifferent to allow it to gain a foothold, surely courts disaster in the end, for once established in your plantation it will speedily encompass that bed's destruction beyond any measures within my knowledge to successfully combat it.

These were the reckoned enemies until the cutting season of 1922, when the addition of cutworms proved the most destructive of all, and in spite of many remedies tried, they persisted in their damage to the very end of the cutting season.

I have told you how to make an asparagus bed, and there may be some one present whose chief aim is to remove it. I will say to that person if you will cut your asparagus until the first of June, and then plant corn between the rows, and continue cutting asparagus and cultivating corn until August, you will have the longest and most profitable asparagus season and the best corn crop you ever grew.

To discuss briefly with you the growing of tomatoes. We grow Earlianas. We save our own seed, and I do not believe anybody can get any better seed than the man who saves it for his own purpose. About March 10th, we sow this seed in a neighbor's greenhouse. About April 1st, we bring these flats home and transplant them to a hot bed, having a good bottom bed. April 20th, we are ready to transplant again, this time to the cold frame, and here is where our methods differ from those generally practised. After first levelling down the bottom of those cold frames, we put in 2 inches of specially prepared, well-rotted manure. After patting it down, we put 2 inches of soil the same way. We then space our plants 4½ inches each way, grading them so that the smaller ones may, if necessary, be given a little kindlier treatment, in order that we may have uniformity the day they go into the field.

About May 10th, or ten days before we expect to field plant, we subject them, in order to serve the purpose of our method, to what you might consider drastic treatment. With a clean sharp spade, we cut between these plants, both ways, and block them out into individual blocks, approximately 4½ inches apart each way. This blocking out seems to serve at least two or three purposes. It saves the cost of planting boxes; it economizes in the use of space; besides it facilitates the movement of those plants the day you put them in the field, and seems to have the merit of an additional transplanting.

In preparing our ground to plant, about May 1st we like to plow down a rye or a clover sod on which has been spread during the winter months some short or well-rotted manure. On this we immediately use the roller, and sometimes it is necessary to use it two or three times, and we work this ground more or less continuously until the day we are ready to plant them. We mark it out 4 x 4½ feet, the wider distance the way you are going to pick. Then, with the team on the one-horse plow, we run a furrow one way and set our plants at the intersection, using some nitrate of soda or a good vegetable fertilizer. On planting day, with a good plant, the chances are all with you for a good crop, but without that good plant you can hardly hope to retrieve your lost

position. About May 15th we keep our eye on the weather, and it is a happy combination of circumstances that waits on the early tomato grower with those best conditions of soil, weather and plants on the one day. Every grower has a mind's picture of what constitutes his ideal of a plant the day it goes into the field. Some have a nice cluster of tomatoes on them; others have, besides, the side shoots or laterals well developed. A nice dark broad top with the buds all ready to break and just an occasional yellow blossom showing here and there throughout the beds is my choice, for without a greenhouse it is hard to get them past that first flowering stage, and the shock of transplanting should preclude any experienced grower from putting them in the field when they are in full flower. We cultivate immediately after, and we keep this up at intervals of four or five days for the next four or five weeks, when those vines should cover the ground. We all like to see them grow, and there is more in getting the ground covered up perhaps than the average grower thinks, for as it is only natural that the roots of any plant should have the protection of its own foliage anything we can do to assist and patronize nature to this end is all for the best, for the most casual observer among us ought to notice that Nature's every effort is to cover up the bare ground.

About the first week in July we will be getting our first ripe fruits. A week or ten days later we will be picking for the market, and those first pickings are a job for the boss himself. It is a mistake to allow careless boys or inexperienced help to go through your tomato patch at this time, tramping vines and rough handling those first clusters. Besides the experienced eye knows best just where to expect a ripe tomato down beneath the leaves. A few weeks later when the whole patch turns red under a few hot August days then it is anybody's job. But right here, I would like to leave with you a word of caution. Up to a certain period we have rightly recognized and fought the weeds as an enemy. Now we might accept their friendly service, for, as your tomato foliage diminishes, the growth of the weeds is a natural protection to maintain that balance against sun scald, and I will just relate to you a personal incident in this regard. One day a few years ago, I went away at this particular time, and I thought perhaps I might be delayed, and I left word that when the help got the rest of the work done they might go into the tomato patch and pull out the weeds, and I don't think they ever did such a thorough job during my absence before. It just happened that it was at that critical time when the sun came out perhaps for a day or two between 90 and 100 in the shade. If they had left a few weeds or had thrown some down on the vine, it would have helped matters ; as it was we did not get a tomato on the patch afterwards. So you do not want to interfere with Nature very much at certain times.

But about this time I am ready for a sacrifice anyway, the market will be pretty well shot, and I am thinking of next year's crop, so we just go into that patch and sow two bushels of rye and one-half a bushel of hairy vetch to the acre among the vines and weeds, and then chop it all up with the disc and roll it down. In three weeks you would not know what the previous crop had been.

I could tell you something about melons, and if there is anybody in the room who has any questions to ask about melons or tomatoes I will be glad to answer any questions they may like to ask.

Lawrence Baldwin : In respect to melons, do you plant the melons in hills or rows and how far apart do you plant them ?

Harper Secord: Melons should be planted about 5 x 7 feet apart. We have grown melons different distances—4 feet, 4 x 5 feet, 5 x 6 feet, and I

believe in our district with the kinds of melons we grow, it has come to be recognized that 5 x 7 feet is about the proper distance to grow them.

Upon the question whether it was wise to have but one plant in a hill, Mr. Secord answered: If you can have that one plant during the whole season in that one spot you are all right; but we have so many things to contend with. Last year the cut worms almost ruined our melon patch, and we began with three or four plants in a place. While we recognize that one plant in a hill will give the best results, it is always best, unless you are absolutely certain that you can guard against insects and diseases, to fortify yourself by having at least two or three plants in a place.

Q.—What varieties do you grow?

HARPER SECORD: We grow Osage and Irondequoit.

Q.—How many melons do you count on getting to a vine?

HARPER SECORD: Something depends on the size of the melons, but while you will sometimes pick from 12 to 15 melons, if you get four or five melons that are saleable off a hill, that is about as much as you can expect.

Q.—Do you plant the seeds or do you transplant the plants?

HARPER SECORD: It is almost essential, in growing melons, if you want them early and want quality, that you start those seeds in a greenhouse or hot bed. We go along the roadside and cut sods, turn them upside down into a hot bed, and cut them into cubes four or five inches square and into these we put seeds. About the first of June we put them into the field.

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## BLOOM FROM SNOW TO SNOW

GEORGE SIMPSON, OTTAWA.

The title which has been given to my brief talk has a somewhat pleasing and sonorous sound, suggesting that horticultural utopia of perpetual bloom that gardeners dream about but seldom achieve.

In the well considered garden thought should be given to providing beauty for all seasons of the year. A plan that merely gives a brilliant effect in summer is faulty and wasteful of garden space and opportunity.

At no period of the year does the garden hunger become so acute as towards the close of a long and dreary winter. In early April the days lengthen, the sun shines more brightly, the birds arrive from the south and the air becomes soft and genial. The first pulsations of re-awakened nature are discernible, and although these may be momentarily checked by a belated blast from the north, the south wind comes whispering back, and before you realize it gray old winter has retreated and spring the gentle spring of the poets is here.

What message will it have for you, what answer to the pent-up longing for the sight and perfume of garden flowers? Shall your emotions be stirred, your pulse quickened, your heart gladdened at beholding the first bright heralds of the spring pageant, or must you content yourself with surveying the brown, sodden earth and the reflection that in time—possibly weeks hence—the garden will rouse itself from its long slumber and put on the colourful garments of the summer season?

Will you continue to be satisfied with a four months' garden when it is easily possible to have a garden full of bloom for seven months? Or, will you resolve this very spring—nay this very day—that your garden shall not lie dormant for six weeks or two months but shall rush into bloom with the disappearance of the snow and that the joyful procession shall move forward

without interruption until the fading of the last flower of autumn? Will you give up even then or will you so plan and contrive that the winter landscape shall be enlivened and beautified with evergreen foliage and the brilliant colours of the berried shrubs and trees?

We are all familiar with the garden that does not begin to show colour until late May or early June, when it bursts forth into a riot of bloom with the opening of the irises, pœonies, oriental poppies, sweet williams, and foxgloves. In the meantime, the garden has remained flowerless during two of the most potential and delightful months of the season, simply because use has not been made of the many suitable bulbous and fibrous rooted hardy perennial plants—winter aconites, snowdrops, alliums, chionodoxas, daffodils, narcissi, tulips, arabis, dwarf phloxes and aubrietia, to name only a few of many flowers that can be used with charming effect in spring and early summer.

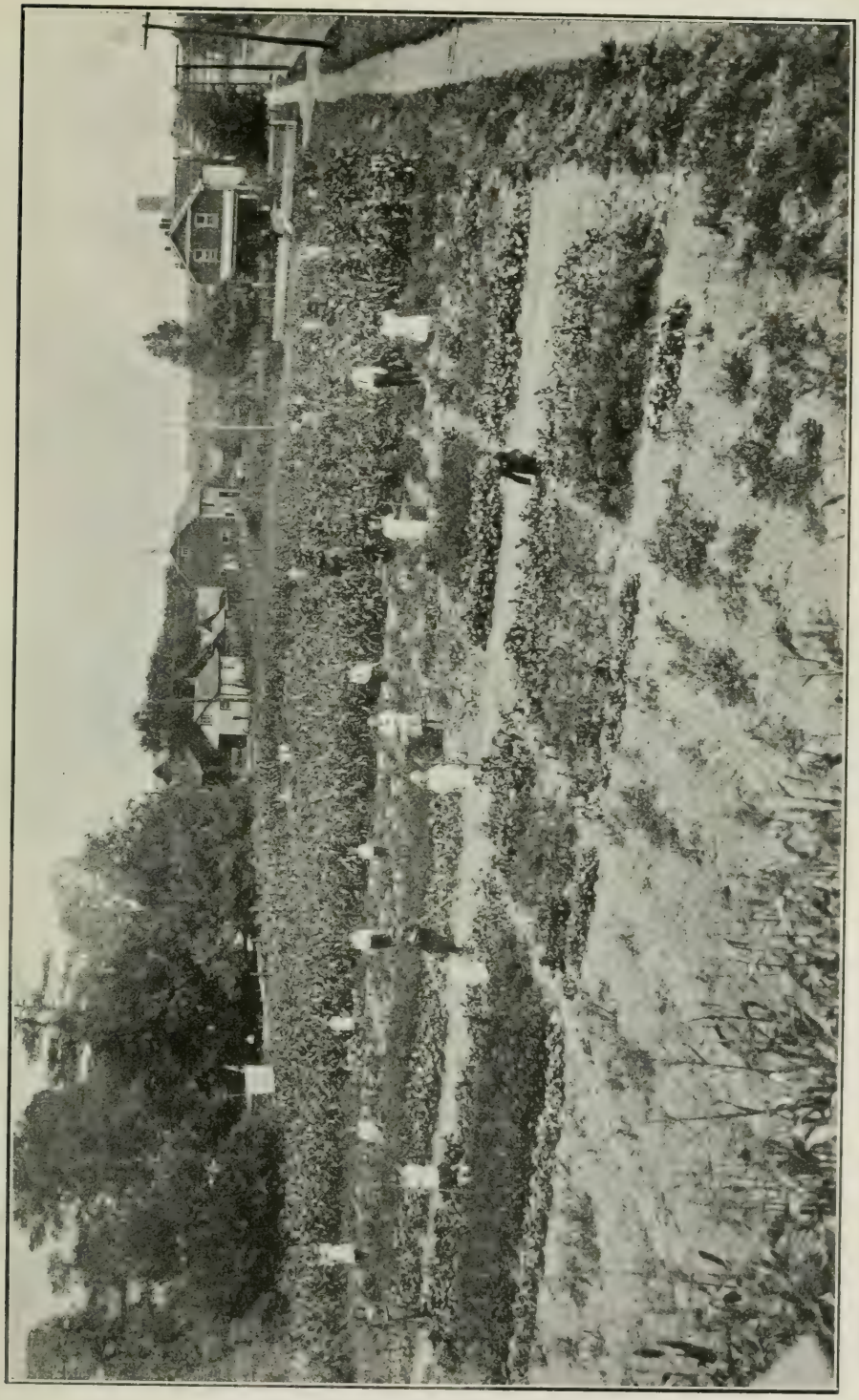
Now, what about the autumn? Let us for the moment turn aside from the enticements of the summer garden—the paeonies, the iris, the gladiolus—forget them all, and consider what is going to happen when the radiant phloxes have, through lapse of time and exhaustion, lost their power of enchantment. From September onwards the perennial border is too often an unsightly ruin—a spent fire work—unless buttressed and replenished by belated annuals which succumb to the first frost leaving behind them disorder and desolation. We have a number—not many but enough—robust, hardy perennial plants and bulbs to keep that border alive and gay until the end of October and, in favourable seasons later. Here again a little forethought, a little planning, will prolong the period of bloom for almost two months.

How are you going to bring all this about? Certainly not by auto-suggestion; it cannot be wished into existence. It must be thought out and planned, and the time to begin thinking about it is now. Many people think about planting bulbs when they see them in bloom and forget all about it at the proper planting season. Spring and autumn flowering bulbs may be planted from August to November, and the list should be commenced when spring flowers are in bloom and the impression is fresh and vivid, and completed during the early summer to ensure the arrival in good time of those bulbs that require early planting and notably those that belong to the narcissus family.

I do not propose to deal with all the plants that are available or suitable for spring and fall bloom, as any comprehensive list would exceed the limit of time allotted to this subject, but I shall illustrate the different classes and comment briefly upon them as we go along. My hope is that gardeners, while pursuing the lines that especially interest them, will not overlook the larger possibilities that lie before them, but will plan and plant for garden and landscape beauty from snow to snow and beyond.

I would like to say a word about the arrangement and planting of spring and early summer flowering bulbs. Every plant that can be grown in grass adds to the interest and effectiveness of the spring garden, increases the space at your disposal, lessens your work and enables you to reserve more of the cultivated parts of the garden for those plants that demand extra care and good soil. Therefore, naturalize those spring bulbs that are suitable for such treatment, and that means practically all but the hyacinth and tulip. These bulbs can be grown in grass, but the formality of their flowers demands for them a place in bed or border.

To get the full beauty of the tulip, place it in association with other plants of a different habit of growth, flowers and foliage. Many combinations will suggest themselves, such as tulips growing beside or through violas, myosotis,



School gardens at Weston

arabis, iberis, and other low-growing plants. Darwin tulips placed in clumps between dwarf herbaceous plants along the front of the perennial border are always effective provided colour clashes are foreseen and avoided.

Small bulbs, such as scillas, chionodoxas, crocuses and grape hyacinths are very charming planted in grass, or at the extreme front of the border, or at the edge of the path. They bloom simultaneously with some of the dwarf carpeting perennials, and the associations are always pleasing; as, for example, that of the muscari and the single arabis. These little spring bulbs do well under shrubbery, or in fact in almost any odd corner, and, if left undisturbed, increase both by offsets and self-sown seed. To provide for autumn bloom in the same places the autumn crocuses and colchiums may be interplanted with the early spring bloomers.

Bulbs, particularly the tulips and the narcissi, can be most effectively used to interplant the perennial border to give colour before the herbaceous plants have reached the blooming stage. For cultural reasons it is always wise to lift the bulbs when the foliage has ripened because with continuous cultivation and watering throughout the summer the bulbs are denied that period of complete rest so essential to the conservation of the stored-up energy required for satisfactory bloom the following season. If possible, allow the bulb to remain in the ground until the foliage has turned brown but, if the space is required for other plantings, lift the bulb carefully, preserving stem and root and heel it in until the foliage has ripened. This is an expedient that should not be resorted to if avoidable, as the results are never so satisfactory as when the bulb is allowed to mature in the position in which it has bloomed. Always remove the seed pod when the bloom has fallen, and when cutting the bloom do not cut the leaves. Bulbs naturalized in grass or planted in uncultivated and unwatered portions of the garden should be left in the ground, but the grass should not be cut until the bulb foliage has turned brown.

Mr. Simpson's address was illustrated by coloured slides arranged in four series:

(1) Early and late spring bulbous flowers, specimens and naturalistic plantings;
(2) Early and late spring dwarf herbaceous edging, rock and wall plants;
(3) Late autumn bulbs and herbaceous plants; and
(4) Winter colour.

The flowers and plants individually dealt with follow: Galanthus Nivalis (Snowdrop); Leucojum Vernum (Snowflake); Scilla Sibirica ; Chionodoxa (Glory of the Snow); Crocus; Muscari (Grape Hyacinth); Fritillaria; Daffodils and Narcissi; Hyacinths; Tulips, early, midseason (Cottage, Darwin, and Breeder); Trillium Grandiflorum; Hepatica Triloba; Ornigothalum Umbeklatum (Star of Bethlehem); early bulbous Irises.

Herbaceous plants: Arabis Albida, double; Iberis Sempervirens; Alyssum Saxatile; Aubretia, as a rock, wall and edging plant; Aquilegia Glandulosa and Oxysepela; Viola (Tufted Pansy); Anemone Pulsatilla; Iris Pumila; Polyanthus and Primrose; Primula Saxatilis; Campanula Carpatica; rocky mound with Campanula Carpatica, Dianthus species and varieties, Linum Flavum, etc.

Fall blooming plants: Sedum Spectabile; Boltonia Asteroides; Japanese Anemones; Colchicum Autumnale; Autumn Crocus; Hydrangea Paniculata; Lilium Speciosum Rubrum; Perennial Asters; Hardy Border Chrysanthemums; Greenhouse Chrysanthemums.

Winter colour: Coniferous evergreens; Helichrysum (for indoor decoration); Barberry, scarlet fruit; Pyrus, Sorbus (mountain ash), yellow fruited and scarlet fruited.

W. E. Saunders, of London, added some interesting details with regard to his experiences in the growing of the autumn crocus species, emphasizing particularly the beauty and adaptability of C. speciosus.

W. E. Saunders, London : One of my favorite early spring flowers Mr. Simpson did not mention—the Iris Reticula, a beautiful purple thing, that has ceased blooming before the crocuses open. If you would like to have a fine Iris, get it. If you want a lovely blue get the Histrioides.

In the autumn two flowers left out that I would like to see put in are the Speciosus, a blue of an indigo type, striped with wonderful orange, and the Zonatus is another one. They scatter all over the garden.

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## GLADIOLI.

Dr. F. E. Bennett, St. Thomas, threw on the screen a number of excellent slides descriptive of the many varieties of this beautiful flower that has of recent years become so popular in Ontario ; also views of the trial grounds of the St. Thomas Horticultural Society in which there are about 800 varieties, and of the exhibit of the Society at the Canadian National Exhibition in 1922, which was very attractively put up.

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## ADDRESS.

### Rev. Wm. McKay, Weston.

We as horticulturists from all over this Province believe certain things. We believe that the home and the community can be made safe, agreeable and attractive no matter whether they be in city, town, village or countryside—safe morally, agreeable economically and attractive socially. God and man unite in happy partnership in nature's paradise, and as a result the world listens to the immortal words forming the sweetest of all songs:

"Be it ever so humble there's no place like Home."

The spirit of love is born, the spirit of Bolshevism is buried.

We believe that at least two things tend to defeat this purpose. The first is pride plus poverty, and the second is wealth plus vulgarity. We believe that any policy on the part of governments which seeks to make people rich with money only is a policy which contributes more than anything else to drive people from their homes. The sooner the farmer becomes rich, other things being equal, the sooner he leaves the farm. We believe he must be made happy and contented as well as rich. We believe he must be anchored by the ties of love and sentiment. We believe the secret is the spirit of horticulture.

We believe that the home cannot be separated from the community. The spirit of horticulture demands an interest in the community. The community must be right or the strongest Christian home will not forever survive. Even Abraham, the father of the faithful, discovered this and emigrated to a new country. The spirit of horticulture transforms a house into a home, a building lot into a garden, and a community into a neighborhood. By love and sentiment we feel the sense of legitimate ownership, and with other such neighborhoods in city, town, village and countryside—(and all are needed)—we are led to say with the true patriot,

"We love our land because it is our own,
We scorn to give aught other reason why."

And, finally, we believe that the spirit of horticulture possessing as it does the secret of nation building, possesses also the secret of the building up of all nations by knowing and loving our fellowmen in all lands as we do their flowers.

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## ADDRESS.

### Hon. E. C. Drury, Toronto.

Horticulture has had its ups and downs, and we need not suppose that everyone that grows a basket of fruit or a bunch of flowers is an angel, because they are not. And we need not suppose either that they lack their troubles. They have had their troubles from the beginning up until last summer. I had a very great disappointment in the growing of a melon. I have a very good friend in the House up here who is none the less a good friend because he is a political opponent. He also has failed in growing a melon. The gentleman is W. F. Nickle of Kingston. A year ago he sent me one of the finest melons that I ever saw or tasted. When I saw him, I thanked him for it and congratulated him as to the quality. And he said : "I will tell you what I will do. I will give you some seed of that variety, and we will see who will grow the best melon, and the winner is to get a hat." He sent me some of the seed, and I grew it. I gave it a lot of personal attention, and as the fruits developed they were beautiful in size, they were perfect, and I looked forward to winning that hat. But when we cut the first one it had no flavour whatever. I said to myself I hope I shall not see my friend Nickle for a little while. I shall certainly not send him any of this melon, because we had agreed that each should judge of the excellence of the other's product. He sent me one, and when I cut it, lo, it was the same flavour as the one I had cut. I suspected him perhaps of having substituted some other kind of seed for me, because the two melons in Simcoe and at Kingston were identical in lack of flavour. Can you tell me what happened those melons? Were we both so anxious to beat the other, that we forced them beyond bounds? Who got the hat? They were not worth a hat, and we decided that neither was entitled to it.

Now, speaking seriously, I believe that the work of this Association is producing very good results throughout the country. I believe that we must give much attention to horticulture, for, as your President has told us, nothing so accentuates the love of home and the cultivation of the best sort of sentiment as the care and growing of plants, flowers, shrubs and trees, because it denotes and fosters the love of beauty, which nearly every one of us has within him, and it is a vital factor in character and home building. The farming population of the country have this in them strongly, more strongly perhaps than any other class, because the love of the land is born in them, and they will do much to retain possession; that means that the work that they do in creating beauty shall go down to those that live after. They do not always have gardens, because unfortunately during a good many years our countryside has been so depopulated that there are not enough hands to do the things that are necessary to have beautiful surroundings. Perhaps, stimulation is all that is necessary to put the desire to have beautiful surroundings into actual effect. No one could say that there is a more beautiful countryside in the world than that of Ontario, certainly no more beautiful countryside in Canada. I thought it was proved in two conclusive ways. In the first place that the love of ownership is so great that the farmer will pay more to own than they could rent for. Everyone knows that you can rent a farm for less than the interest on the purchase price,

and have the owner take care of interest and taxes. That is a proof that our farmers are incurable sentimentalists. And I have thought sometimes in driving through the country, in looking at two long rows of beautiful trees along the roadside, planted by hands that were under the sod long before they came into beauty, planted at the cost of a good deal of work carried by shoulders that already had much work to carry, that there was a man who had written an enduring poem, a beautiful poem for the reading of those who passed that way. Homeloving, yes! Beauty loving, yes! Poets at heart, yes! And the more we can get of that sort of thing the better for our country. It is better than riches. I believe, too, it has a wonderful effect upon the character of the young. Some of my earliest and best recollections are of a flower garden tended by one who loved flowers with a passionate love, that did much in shaping my own mind and thought, and that gave me, I think, a sentiment that I would never get rid of, of affection for home and all the kindly things and the beautiful things that we find growing around us. And if your Association in this hectic age, when we are all moving too fast, when we are not giving time enough to

Beautiful bridge at Island Park, Toronto.

beauty in our minds, perhaps not dreaming enough,—we have got to do a little dreaming if we are to be at our best; we must not be altogether hard and practical and materialistic—if you can do anything to stimulate these things, that are found in the beautification of our homes and the village and town streets, and to give the people an interest in such lovely things as flowers and plants and shrubs and trees, the most beautiful and permanent of the things that we create, (I love to see a farm surrounded by trees, I love to see a village street that is full of trees)—if you can do that you will contribute not only to the happiness of the present generation, but you are, in a very important way, contributing to good citizenship and home building.

Dr. Rolph: The Rose Society of Ontario appreciates very much the kindness of the Ontario Horticultural Association for allowing us to be here this evening.

J. F. Ault: In my part of the country they call me "the canna man," as I grow nothing else but cannas. When I told a friend I grew cannas last year 13 feet high he sat back in his chair, and I could read his face, which plainly

said: "I should like to see them." I have to-day in my cellar over 400 cannas bulbs that I use, what I want for myself in the spring, and then I give them away to other societies and those who make use of them. I believe there is nothing that is going to bind us to the farm like beautifying the farm home. When I drive through the country and see farms without a tree or anything beautiful, I feel sorry for the owners thereof. They are losing a lot of beauty and pleasure that can be gotten out of trees; I have been connected with farming all my lifetime, and I know what it means to live in a home where there are flowers, and in a home where there are no flowers. I would like every horticultural society represented at this convention to go home with the full determination to get as many farmers linked up with this work as they possibly can.

W. P. Bailey, Fort William: Our problems in the North country are perhaps a shade different from those obtaining with most of you in the southern portion anyway, in that our season is much later and much shorter, and while we have a population that is rated at a little over 20,000, there is a large percentage of foreign element in it and we have tried to combine with our Society the cultivation of vacant lots as far as vegetables and produce is concerned, and in that manner have drawn the foreigner into our Society. It has proved of benefit to everybody concerned in that we have a lot of waste spaces that we could not put all into flowers, and we feel along those lines we have made probably as much or more progress than any other city of its size in Ontario. We grow some beautiful flowers there, and have proven from year to year that more varieties can be grown.

Brief addresses were also given by Rev. Mr. Tebbs, J. M. Pearen, Rev. Mr. Rae, and Rev. Dr. A. H. Scott, of Perth.

Prof. Macoun, C.E.F., Ottawa: Nearly all the speeches to-night have been in regard to flowers and how they mean so much in the home life of this country. They stand for love and for affection, they are the symbols of those things. At the time of birth, of marriage and of death, flowers are placed before our loved ones, too, as a symbol of our love and affection for them. Surely, gardening is one of the highest types of occupation that any of us could be employed in, and I often think that that poet who wrote that one's heart is nearer God in the garden than anywhere else on earth came very near the truth. There is someone else who has said that gardening is one of the few pleasures that deepen as we grow older. Other earthly pleasures become less and less, but the pleasure in gardening grows greater and greater, and those of us who are getting up in years and who are lovers of plants can have that feeling—that there is something that will stay with us to the very end and make life worth living, whether anything else does or not. That is why I for one find that coming to this convention, as I do, is one of the greatest inspirations to me. I feel that here all is for love and nothing for reward.

Prof. A. H. McLennan: Let every hamlet and village and town in this country have their horticultural societies, because I believe it is through the flowers that we will weld together the various elements in our population and have survive that to which President McKay has referred. If you go down through the foreign quarter in the City of Toronto, and see the crowds, the swarms of little foreign children, and if you drive down through the streets you are pretty nearly taking your life in your hands. It is to these also that we should appeal. There is one thing that I detest more than anything else, and that is to see a garden surrounded by a high board fence. And I have seen a good many of those among wealthy people. It is nice to have a thing to enjoy

and keep it to yourself, but it is a whole lot nobler to give it out so that other people can see it and enjoy it too. In front of us we have the handicraft work of the Creator of all things—an orchid blossom. Just try, through art in some form, to reproduce it. If you study plant life you will find one thing standing out more than anything else, and the farther you go the more you will see the same thing, and that is the similarity between the human being and plants.

I enjoyed the judging at the Fort William show more than any I have ever done. There was one occasion where I found the rich man and the poor man fighting it out in the judging, and in many cases the poor man won. But they were all good sports. I doubt if anywhere in the Province any better sweet peas are grown than I saw there, and when you consider the difficulties under which the gardeners work up there in the production of flowers you can certainly give them a lot of credit.

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## THE LIFE HISTORY OF MILDEW.

Prof. J. H. Faull.

There are two steps in the study of a disease—whether it be of roses or of man, (1) an investigation of the cause, and (2) a determination of the means of control. The latter is the objective to be attained, the former provides the rational working basis. I have been invited to address you on the cause of one of the commonest of the diseases of most cultivated and many wild plants, and my remarks will be restricted to this field. I am informed that you will deal with the means of control in a discussion to be undertaken at another time.

The disease referred to is caused by a fungus to which the name mildew is given—perhaps it would be better to say mildews, for there are from 60 to 100 species, and they are known to attack at least 1,500 different kinds of flowering plants. The life history is essentially the same in all cases, so that in general what may be said of one will apply to all.

Mildew shows itself as whitish patches on the upper or lower surfaces of leaves and sometimes on the stems and fruits. They are often quite powdery in appearance and later in the season are dotted over with large numbers of very small dark granules scarcely perceptible to the unaided eye. These patches consist of the fungus and practically all of it, for with the exception of very small sucker-like branches which penetrate the epidermis of the host plant, the parasite is restricted to the outer surface of its host.

In order now to better understand the life history of mildew it will be well to bear in mind that it is a plant governed by essentially the same laws as those that govern the life of flowering plants—it demands food, moisture, heat and oxygen just as they do. It also reproduces, and it is interesting to note that there are both sexual and vegetative types of reproduction. Just as the strawberry, for example, forms its seeds following a fertilization, so reproductive bodies are organized by the mildew following a fundamentally identical process of fertilization, and these bodies, just as is true of seeds, are designed to carry forward the organism to another growing season. Then, just as the strawberry throws out little buds on its runners that serve for the immediate reproduction of the plant, so the mildew organizes little bud elements which serve the same purpose. These latter, it may be remarked, are produced in enormous numbers. The characteristic features of the mildew, its modes of reproduction, and its relationship to its host, can now be readily followed in series of lantern slides to be shown.

Lantern slides were then exhibited, starting with the strawberry. A slide was next shown of the mushroom and of the underground parts from which it springs. It was made clear that a fungus such as a mushroom consists of a plant body (delicate strands or spawn hidden in the soil) a large part of which is given over to the collection and manufacture of food, just as is the case with strawberries or roses, and a part, the umbrella-shaped fructification, which is devoted solely to reproduction. Coloured slides were then shown of the hop plant and of rose bushes affected with mildew. In the latter example the mildew could be seen in patches on the stems as well as the leaves. It was pointed out that, occurring as it does on the stems of perennial plants like the rose, the mildew may be carried over on the host plant from one season to the next. A slide was then shown of mats of fungus growth similar to the white mats of the mildew, but grown on gelatine in test tubes. The rate of growth of the fungus was demonstrated in this connection. The slides turned next to a study of the structure of mildew, and they clearly illustrated the fact that the mildew consists of very delicate threads, more delicate in texture even than the threads of the spider's web, and yet in their essential organization and their mode of growth they do not differ from other plants. These fungous threads spread over the surface of the leaf or stem of the affected host, ramifying here and there and increasing in length radially in all directions. The older parts of the mats by this time have begun to send up little perpendicular branches corresponding in a way to the runners of the strawberry. From the tips of these branches little single-celled buds are successively constricted off. These buds are the vegetative elements of reproduction (spores) and they serve to rapidly extend the spread of the mildew. They are carried by the wind or other agents, and falling on susceptible parts of a host plant, they germinate and so serve as the starting points of new patches of mildew. An estimate was made of the number of such buds or spores produced, and it was claimed that there might be as many as a million to the square inch. A slide was also shown illustrating the rate of growth beginning with the germination of a single spore. The growth can be followed continuously by a suitable manipulation of the microscope, from which it may be seen that within a single day a very extensive development of threads will take place. It is easy to understand with a knowledge of these facts in mind why it is that mildew under favorable conditions of weather spreads with such tremendous rapidity.

The next topic dealt with referred to the relation of the mildew to the host plant. Slides were exhibited which showed that the threads of the mildew, while lying for the most part loose on the surface of leaf or stem, here and there organize adhesive pads, more or less circular, expansions of the threads. These pads are analogous in a way to the pads found, for example, in a fly's foot. More than that, it was shown that from the centre of these pads little peg-like branches are sent downwards which penetrate the membrane of the host plant with which they are in contact. These branches expand at their tips after penetration is effected, the expansions occupying considerable spaces in the host cell; they serve especially as organs of absorption. It is quite clear, too, that these absorbing branches or "suckers" are parts of the fungus beyond the reach of sprays or dusts, and that they may well persist in the perennial parts of their host, thus serving to carry over the organism from one season to the next. Certain difficulties in control are thus quite understandable.

The last phase of the life history of mildew dealt with the resting bodies. These, as has been pointed out, are organized following a process of fertilization. Here and there little branches of the mildew, sexually distinct from one another,

fuse and around them there develop the small dark granular bodies which make their appearance on the mildew patches towards the latter part of the summer. These bodies are microscopically of very beautiful architecture. In some cases, as in rose mildew, they continue to adhere to the fallen leaves so that infection in the following spring is bound to start from this source.

A knowledge of the life history of mildew indicates three lines of procedure with respect to control. (1) By spraying or dusting. Experience has proven that while this method of control is not entirely satisfactory, yet it is of some value; it is certain that a suitable spray or dust will create conditions which are unfavorable to the germination of spores or the extension of the fungus. (2) Benefit results from attention to environmental conditions such as the avoidance of too much moisture, overcrowding, over-fertilization. Mildew develops rapidly where there is abundant moisture, and where there is too great a supply of certain types of fertilizers. Under this same heading the question of sanitation plays a part such, for example, as the disposal in the fall or very

Section of Palmerston Horticultural Exhibition.

early spring, of the accumulated litter in the neighborhood of diseased plants. (3) The main hope of the future lies in breeding resistant varieties. The rose-grower, for example, knows that a number of varieties of roses are not subject to mildew. Enough experimental work on the subject of disease resistance has already been done to clearly establish the fact that disease resistance and disease susceptibility are hereditable characters, and that it is quite possible to breed varieties at will that are immune to disease. Attention during the past has been given mainly to breeding for colour or form. It would seem now much more important that efforts should be devoted to breeding for immunity from or resistance to disease. An excellent paper on this subject, for the publication of which the Rose Society of Ontario is to be congratulated, appears in the Report of this Society for 1922, an article entitled, "Roses and Mildew: Immune and Resistant Varieties" by George M. Taylor, of Edinburgh, one of the ablest horticulturists in Great Britain.

What has been said of rose breeding is also true of the breeding of other kinds of plants.

Before concluding, it may be helpful to note that breeders are likely to be discouraged in their earlier attempts by apparent failures unless they recognize certain fundamentals characteristic of either the disease-producing organisms or the plants they are manipulating. As for the former, intensive life history studies show that there are various strains or varieties of the same kind of fungus as, for example, of wheat rust; and this is quite likely to be the case with a mildew such as rose mildew. Resistance to one strain does not mean resistance to all; this has been absolutely demonstrated for wheat rust. When a breeder, therefore, discovers that a supposedly resistant variety of rose falls a prey to mildew, he may reasonably conclude that it is resistant to certain strains only of mildew. The breeding then must be carried along one stage farther. From the standpoint of the host plant, if disease resistance is a recessive character, it is known that in the first generation after hybridizing the progeny will be subject to the attacks of the fungus in question. It is only in subsequent generations that the characters become segregated and that individuals will be found possessing immunity and free from the trait of susceptibility. Now as for the operator, it is plain that the practical grower shows superior skill in the manipulations of his plants, but it will also be granted that if the horticulturist with his skilled experience and the scientist with his knowledge of fundamental principles will work hand in hand, each supplementing the efforts of the other, the desired goal will be the more certainly and quickly attained.

## CUT FLOWER ARRANGEMENT.

G. A. Reid, A.R.A., Toronto.

It is perhaps unusual for this Association to have an artist address them. I must confess that I am no horticulturist, and I know very little about flowers. Last summer I consented to act as a judge at a rose show on explanation that it would be in the decorative section. The matter has of course been to me a thing of very great interest, because in our College of Art we are constantly studying all sorts of problems which have to do with the arrangement of every kind of thing which you can conceive of, from flowers to fruits and figures, etc., and the whole question is one of composition with us. We omit nothing in the way of any form of Art that will help to arrange this study of composition, which we take into our consideration. In composition, or in any kind of arrangement which you may consider, the plastic arts are governed by composition of whatever form you may take it and in the realm of composition we have a complete study of practically all forms of arrangement that you may possibly consider.

In composition there are three general elements of form, tone and colour, into which, as you will see if you endeavor to make any arrangement of flowers, those three factors must enter. In form it may be line, or it may be mass, or it may be any kind of shape which you may possibly think of. In tone, if you have anything in the form of a photograph which you may be studying, you can consider all the shades and grades of formality without the consideration of colour. And in colour, of course the inclusion of form and tone must always be considered.

In composition there are two general divisions which separate absolutely at the beginning. There is the line which separates and divides one from the other, and the all-over pattern, of which these slides are examples. The speaker then showed a number of slides with an instructive running comment.

Free composition in western style showing principal and subordinate lines and masses

## TREASURER'S REPORT.

The Treasurer presented his report as it appears on page 6, and in doing so urged the Society to take some action in endeavoring to enlarge its revenue. He then went on to say : We are quite justified in having a greater vision of the possibilities of this Association, and if that is the case then we must have a greater vision in regard to this finance question, and we must take it up. It is a limitation on your activities, and it is bound to become more so from year to year; therefore, I trust you will do something along this line if it is possible in the near future.

I find that in the Government report of 1921, upon which is based our affiliation fee, there were 141 societies, out of which 84 societies only are qualified to be present and represented here. Of this 84, 13 are new affiliations, which is to say that we have 29 not affiliated out of the 141, and of the 13 new affiliations we have 7.

In connection with this matter of the affiliation of the local societies with us, I am glad to see that the new societies are imbued with the idea that it is compulsory that they affiliate with us. Of course it is not, but it is advisable certainly for them to do so.

There is also another feature in connection with this increase of the societies of the Province, which I think brings us to an epoch, as it were, in our work, and that is the fact that we are now welcoming township societies and the spread of the horticultural idea into the countryside—undoubtedly one most desires things that we can work for and look forward to, so that I consider the incoming of these township societies is a great advance for this Association.

I have felt for some years back that too short a time was given to the local

societies' representatives to ask what they wanted, and to say what they wished to say, at this convention. To me this convention should always take the place of a clearing house, as it were, for horticultural ideas. How can you expect these ladies and gentlemen of local societies to carry on to advantage if they are not afforded an opportunity either through the Act or publication, or something of that nature, or through meeting their fellows who have experience and get their views.

The Report was on motion received and adopted.

## CANADIAN COUNCIL OF HORTICULTURE.

J. E. Carter, Guelph.

At the last annual meeting of the Ontario Horticultural Association, the writer gave a paper entitled, "A Provincial Horticultural Show," and pointed out the advisability of steps being taken to bring about a national registration of plant varieties and at that time the idea was to establish a Provincial show and also a Provincial registration. I pointed out that if Provincial both as to the exhibition and the registering of plants it would not meet the requirements. What was required was a Dominion registration which would apply to all Canada and by so doing we would be able to secure a Dominion Registration Act. Many reasons were advanced why it would be to our interests to take this matter up in earnest, and a resolution was introduced appointing H. J. Moore, Prof. W. T. Macoun, Dr. Brethour, Prof. Hutt and Miss Blacklock to act as our representatives in conjunction with representatives from the Florists, Fruit Growers, and Vegetable Growers Associations to endeavour to bring about an Act that would cover the horticultural requirements.

A committee consisting of Dr. A. H. Scott, T. D. Dockray, J. M. Pearen, G. Simpson, and J. E. Carter were also appointed to act with kindred organizations to prepare and submit a workable plan for holding a Dominion exhibition of flowers, fruit and vegetables.

These committees met and the result is now well known to Canadian horticulturists by the formation of the Canadian Council of Horticulture, which will represent all the horticultural and allied interests in Canada. This Council secured a charter on the 22nd day of August, 1922. The objects of the Council are,—

To advance all matters tending towards the improvement of the horticultural and allied industries in Canada including plant origination and registration, production, grading, packing, transportation, storage and marketing :

(*a*) By bringing about a close co-operation between those engaged in the horticultural and allied industries in Canada and a fuller understanding of their problems;

(*b*) By initiating, fostering and assisting in obtaining such legislation and regulations as will be beneficial to the horticultural and allied industries;

(*c*) By emphasizing through interprovincial co-operation, the importance of the horticultural and allied industries and to obtain for them the position they deserve as an important and progressive branch of agriculture;

(*d*) By encouraging the development of horticultural education, the holding of horticultural displays, the distribution of literature and by systematic advertising informing the general public as to the value and general use of horticultural products;

(*e*) By encouraging the adoption of uniform standards of grading, packages and packing, and assisting in developing home and foreign markets;

(*f*) By providing means for the registration of horticultural plants, shrubs or trees and recognition for varieties of outstanding merit;

(*g*) By co-operating with the railway, express and steamship companies in securing the best conditions for transportation and a just equalization of charges therefor;

(*h*) By co-operation with any agency working in the national interests for the improvement of marketing methods or for the more equitable distribution of horticultural products;

(*i*) By carrying on any undertaking which may seem to the council capable of being carried on in furtherance of these objects.

*Membership.*

The Canadian Horticultural Council shall consist of eighteen representatives of the Horticultural and Allied Industries in Canada, appointed, where possible, by the Associations of the Industries concerned. Five of these shall be representatives of the fruit growers, (one each from British Columbia and the Prairie Provinces combined, Ontario, Quebec, New Brunswick and Prince Edward Island combined and from Nova Scotia); four of the vegetable growers (one each from British Columbia, and the Prairie Provinces combined, Ontario, Quebec, and New Brunswick, Prince Edward Island and Nova Scotia combined); two of the wholesale fruit and vegetable dealers, (one from Western and one from Eastern Canada); one of the package manufacturers; one of the florists and gardeners; one of the jam manufacturers and one of the canners; one of the nurserymen; one of the amateur horticulturists and one of the seedsmen.

The Council, however, may by two-thirds vote increase its number to provide for the representation of any important horticultural or allied industry not at present affiliated with it.

Associate Members.—Any person may become an associate member of the Council by paying the required fee and shall be entitled to the full privileges of membership therein with the exception of voting.

The representative to the Council shall be appointed at least thirty days before the date of the annual meeting and notice of all such appointments shall be submitted in writing to the secretary of the Council.

A substitute for each representative shall be appointed at the time the representatives are appointed, and the Council notified of the substitutes as well as the representatives.

*Finance.*

In order that the Canadian Horticultural Council shall secure sufficient funds to carry on its work:

The annual dues for each of the members of each of the following associations or companies represented on the Council shall be:

| | |
|---|---|
| Fruit growers | 50 cents |
| Vegetable growers | 50 cents |

And for each of the following interests as a whole:

| | |
|---|---|
| Package manufacturers | $ 500 |
| Florists and gardeners | 200 |
| Nurserymen | 200 |
| Wholesale fruit and vegetable dealers | 1,000 |
| Jam manufacturers | 500 |
| Canners | 500 |
| Horticultural associations | 200 |
| Seedsmen | 200 |

The annual dues of an associate member of the Council shall be five dollars ($5.00).

The annual membership dues shall be payable in advance to the secretary-treasurer of the Council, on February 1st of each year.

*Officers and how elected.*

Section 1.—The officers of this Council shall consist of a President, First Vice-President, Second Vice-President, and three Directors who shall be members of the Council. Said officers shall hold their office for one year or until their successors are duly elected and qualified.

Section 2.—The election of officers for the ensuing year with the exception of the Secretary-Treasurer shall be held at the annual meeting. The voting shall be by ballot by the members of the Council present, a majority of votes cast being necessary to elect.

Section 3.—The Secretary-Treasurer shall be appointed by the Board of Directors and shall hold office at the pleasure of the Board of Directors. He shall receive such salary as shall be determined by the Board of Directors.

*Meetings.*

Section 1.—The annual meeting of the Council shall be held on the first Tuesday in March of each year at such place as is chosen by its members in session at its previous meeting. Provided it should become necessary the Board of Directors shall have power to change the time or place of such meeting. Notice in writing of such change shall be forwarded by registered mail by the Secretary-Treasurer to each member of the Council at least twenty clear days before the date of meeting.

*Voting.*

Each member of the Council of the Board of Directors shall be entitled to one vote only.

On February 25th, 1922, a Committee interviewed the Minister of Agriculture for Canada, requesting a grant of $5,000 to carry on the early work.

This was granted and the Minister stated that in his opinion the formation of such a council was in the very best interests of the horticultural industry.

The Minister also stated that should such a council be formed, the Government would recognize the Council as the mouthpiece of the industries represented in the Council.

The President of the Ontario Horticultural Association was asked to make an appointment for the balance of the year. The speaker was asked to act, and consented to do so, was placed on the Registration Committee and has attended all meetings of that committee. The work is very interesting to me and I thank the President for permitting me to serve.

The Directors of the Council are:

Col. H. L. Roberts, Grimsby, Ont.
F. W. Bishop, Paradise, N.S.
W. H. Stewart, Aylmer, Ont.
W. E. Groves, Hamilton, Ont.
C. W. Baxter, Grimsby, Ont.
L. F. Burrows, Ottawa, Ont., Secretary.

The Plant Registration Committee consists of:

W. T. Macoun, Ottawa, Chairman.
H. J. Moore, Islington, Ont.
F. E. Buck, Vancouver, B.C.
J. E. Carter, Guelph, Ont.
S. T. Davidson, Fonthill, Ont.

The Plant Registration Committee has now a uniform method of bringing registration of plants, shrubs, trees and vegetables, etc., into effect in Canada. This means that Canada will be the only country for the time being that will have a national registration in horticulture, truly a wonderful advertisement for any country and more so for a young country such as this.

Other committees have been active and some of the work performed consists of a demand to the Federal Health Department enforcing the standard for jam and jellies and for fruit beverages which will give the Canadian people these foods that are pure in every respect.

The Council were successful in securing a ruling that potatoes are a commodity and consequently secured for the people of Canada a lower freight rate.

The Council is now preparing an amendment to the Insect and Pests Act as applying to the importation of foreign vegetables, flowers, shrubs and trees to fully protect this country against foreign insects, pests, and blights.

The Council has also taken action regarding the practice of selling to Canadian people melon peel under the brand of Canadian citron peel, this being an infraction of the misbranding clause of the Food Act.

Plans are now being completed to supply to the people of Canada all information possible to assist them in successfully controlling insect pests, blights whether on flowers, vegetables, shrubs or trees, and the ambition of the Council is to make Canada the foremost horticultural country in the world.

Many other questions are under consideration and much work is being done. I am sure you will agree with me that the undertaking is a big job, but that much has been done in less than one year.

A medal will be presented by the Council each year to the person who in the opinion of the Council has done the most for the advancement of horticulture in Canada during the year ending December 31st.

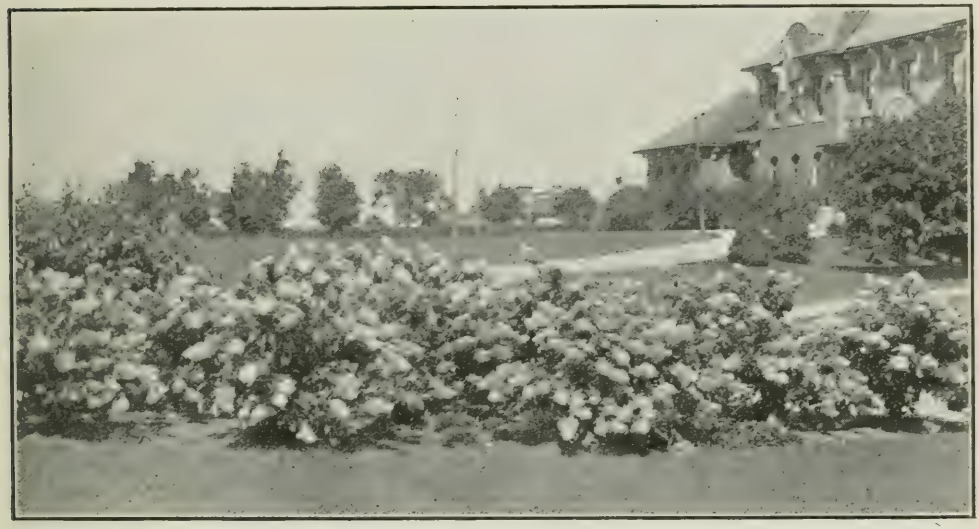
I believe a medal will also be offered to the person producing the most meritorious new plant each year.

In closing I desire to pay tribute to the Hon. Mr. Motherwell, Minister of Agriculture, for his great interest and assistance to us; and also to the great sacrifice being made by such men as the President of the Council, Col. Roberts of Grimsby, W. T. Macoun, Chairman of Plant Registration, and to the able

Secretary, Mr. L. F. Burrows and their Directors in their endeavour to improve horticulture in Canada.

It was moved by Mr. Simpson, who was asked by the Chair to refer it to the Resolutions Committee : "That this Association accept membership in the Canadian Council of Horticulture and confirm the action of the President in appointing Mr. J. E. Carter as the representative of the Association and of amateur horticulturists generally, and the question of financial responsibility be recommended to the careful consideration of the Board."

Carried.



Front view, Macdonald College.

## PLANT REGISTRATION.

W. T. Macoun, Dominion Horticulturist, Ottawa.

Marked progress has been made in the establishment of plant registration in Canada since the annual meeting of this Association last year, when this matter was dealt with by the Committee on Names and Varieties. It was shown at that meeting that a system of plant registration had already been adopted by the Canadian Gardeners' and Florists' Association, and committees had been appointed to deal with the different kinds of plants, and for other purposes. The Canadian Horticultural Council has since been organized, and at a meeting of that Council the question of plant registration was discussed. Members of the Canadian Florists' and Gardeners' Association present felt that greater progress could be made, and registration could be established on a broader basis if it were dealt with by the Canadian Horticultural Council, which included all the horticultural interests, rather than by an organization which represented only part. Among the committees, therefore, that were struck at that meeting was a committee on plant registration. The chairman of this committee was appointed by the Council, and he was asked to appoint the other members of this committee. This he did, and the committee now consists of W. T. Macoun, Dominion Horticulturist, Chairman; H. J. Moore, Islington, Ont.; Jas. E. Carter, Guelph, Ont.; S. F. Davidson, Fonthill, Ont.; F. E. Buck, University of British Columbia, Vancouver, B.C. This Committee

with much assistance from L. F. Burrows, Secretary, Canadian Horticultural Council, prepared a report on plant registration which was submitted to the Directors of the Council for approval, on November 10th, 1922, and with a few alterations was accepted by them.

The same day the directors and members of the Plant Registration Committee waited on the Hon. W. R. Motherwell, Minister of Agriculture, to obtain his support for the Council and for an office of registration. Mr. Motherwell was favourably impressed, and assured those who waited on him that a sum would be placed in the estimates to further the work of the Canadian Horticultural Council, part of which might be used for the establishment of plant registration on the lines submitted in the report of the committee which had been read to him.

The application of the committee was much strengthened by the fact that there had been established in Europe in 1921 an International Plant Registration Bureau by the federation of the Horticultural Associations of Great Britain, France, Italy, Holland and Belgium for the very purpose for which our committee was seeking support, namely, to protect the originators of new var eties of merit. It is expected that the Canadian Plant Registration Bureau will work in close co-operation with the International Bureau just mentioned.

Following is the report which was approved by the Canadian Horticultural Council, and the Hon. Minister of Agriculture, with the omission of part of the preamble, which it is not necessary to include here. Suffice it to say that it was pointed out that it was the desire of the Council to place the plant breeder as nearly as possible on the same plane as the inventor, who by the protection afforded him by his patent is able to make a fortune out of his invention, be it a valuable one, whereas, the normal reward of the plant breeder is very small. While registration cannot protect the plant originator as thoroughly as the inventor of lifeless things, yet it will at least bring to the attention of the public the plants of merit originated by many horticultural enthusiasts in Canada:

1. The Registration Committee named by the Council will name a Provincial Representative for and in each Province. The Committee will also name separate committees to advise regarding classes such as gladioli, paeonies, roses, etc., for recording.

2. By recording, the Registration Committee does not establish the particular value or general characteristic of new plants, but only settles the right of priority of the name of the new plant. The Registration Committee may conduct further investigations and if satisfied that the new plant is worthy of registration such registration shall indicate that the new plant is considered to be of outstanding merit.

3. Only herbaceous horticultural plants, shrubs or trees will be accepted for recording.

4. Any variety which is not recognized as being in existence at time of application (that is which is new) may be recorded, but a variety to be registered must first be tested and found to be of outstanding merit.

5. A fee of Five Dollars ($5.00) shall accompany each application from Canada and of Ten Dollars ($10.00) from points outside Canada. If the variety is not recorded the fee, less expenses ncurred, will be remitted.

6. Each application for recording will be forwarded first to the Provincial Representative, who will satisfy himself that the application covers a new variety.

7. The description given must not bring into comparison any other variety already known in the Trade, in such a way as to discredit this other variety.

Should the Committee think, that the description given is likely to prejudice another variety, they will ask the raiser to alter the terms of the description. If the raiser refuses to do so the recording may be refused and the fees returned less the expenses incurred in returning the money and for correspondence.

8. The application will state:

(*a*) The full name of the raiser of the plant.
(*b*) The full name of the seller (if necessary).
(*c*) The name of the new plant.
(*d*) A brief description of the new plant.
(*e*) Conditions under which the raiser wishes to sell or distribute the new plant.

9. The application with supplementary description (and specimens if possible) will be forwarded by the Provincial Representative, to the Secretary of the Council.

10. An index will be maintained in the office of the Secretary on which is recorded the complete name and, where possible, the description of every known variety of herbaceous horticultural plants, shrubs, or trees. Each application as received will be checked with the index in order to assure that the name applied for is not already in use.

11. After checking, the application (and specimen if possible) will be forwarded to the Dominion Horticulturist for a report as to whether, in his opinion, the variety is new and is properly described in the application.

12. The report of the Dominion Horticulturist, with the application and all information regarding it, will be placed before the next meeting of the Registration Committee which will decide whether the variety shall be recorded.

13. If the Registration Committee accepts the application, all information concerning same shall be entered in numerical order in a special book which will be so arranged as to provide for recording:

(*a*) The genus of the plant.
(*b*) The indication of the variety.
(*c*) Name given to the new variety.
(*d*) Name of the raiser, and, if necessary, of the seller.
(*e*) Address of the declarer.
(*f*) Description.

and such other information as is deemed necessary.

14. All entries will be posted from the recording book to other secondary books according to the great divisions in horticulture, and subdivided in categories so as to allow proper classification, for instance the Register for Arboriculture might be divided in categories as follows :

Fruit trees, ornamental trees, forest trees, rose trees, outdoor flowering trees, indoor plants.

The division, fruit trees, may then, for example, be subdivided into:
Apricot, apple, cherry, peach, plum, etc.

15. As soon as convenient, following the recording, the Secretary of the Council will send to the horticultural papers for the first publication information as outlined in Section 8 (*a*), (*b*), and (*c*) and (*d*).

16. If, in the course of six months following the first publication of a name, it becomes known to the Registration Committee that this name was employed previously for a variety of the same genus, and that this variety is still in existence in cultivation or in collections, the raiser will be invited to change the name, so as to avoid similarity.

17. An endeavour will be made to have horticulturists who publish catalogues or lists including new plants, to mention during at least the three years following the date on which the plant has been put on the market, the name of the registrar of each new plant.

Should a horticulturist publish lists of any new plants without mentioning the names of the raisers, the Registration Committee will advise him that such a practice does not meet the approval of the Committee. If after due notice given as above, a horticulturist still refuses to mention the names of the raisers of new plants included in his list, the Committee will have power to decline any further application from him.

18. The raisers will have the right to include in the conditions of sale of their new plants, the obligation of mentioning their names when the plants are included in catalogues — for a period other than indicated in Clause 17 above — or even indefinitely.

The raisers have the right to specify all the conditions which they think necessary to safeguard their interests, present and future, moral and material.

19. When a new plant is put on the market by a person other than the raiser, it is the name of the propagator which should be mentioned.

20. All the persons who have obtained recording or registration of new plants will be required to exhibit or show these plants at a Provincial exhibition, recognized by the Council, within a period of two years from the date of registration. Failing this the registration will be cancelled. The new plants need not be exhibited as mentioned above if they are offered for sale within two years of the date of registration.

However, if the plants are not offered for sale within six years of the date of registration, this may be cancelled.

The fees charged for registration which may eventually be cancelled, are not returnable.

The cancellation of a registration will only be compulsory if it has been demanded by one or several persons interested in the matter.

21. The Council will make the final decision in case of dispute between an applicant, applicants, or other parties and the Registration Committee.

22. In order to avoid duplication of names and to give international effect to recording and registration, the Committee will co-operate with every known Horticultural Society or Agency.

At a meeting of the Plant Registration Committee after the meeting of the Directors, the following were named and are being requested to act as provincial representatives of the committee:—

*British Columbia:* Prof. F. E. Buck, University of British Columbia, Vancouver, B. C.

*Alberta:* W. F. Broadstock, Secretary, Edmonton Potato Growers, Edmonton, Alta.

*Saskatchewan:* Dr. C. F. Patterson, University of Saskatchewan, Saskatoon, Sask.

*Manitoba:* Prof. F. W. Broderick, Agricultural College, Winnipeg, Man.

*Ontario:* H. J. Moore, Islington, Ont.

*Quebec:* Prof. T. G. Bunting, Macdonald College, Quebec.

*Prince Edward Island:* J. A. Clark, Superintendent, Dominion Experimental Farms, Charlottetown, P. E. I.

*New Brunswick:* A. G. Turney, Provincial Horticulturist, Fredericton, N. B.

*Nova Scotia:* W. S. Blair, Superintendent, Dominion Experimental Farm, Kentville, N. S.

*Yukon:* Mr. James Farr, Swede Creek, Dawson.

It will be noted that the provincial representative for Ontario is Mr. H. J. Moore, Islington, Ont., who has so persistently advocated registration in Canada for many years, and who was chiefly instrumental in getting the Canadian Florists and Gardeners Association to adopt a system of registration. Anyone having new varieties of fruits, vegetables, or ornamental plants, who desires to record them with the Canadian Horticultural Council with a view to registration later on should submit these to Mr. Moore, who will, when necessary, call in other experts in regard to them, before the name and other particulars are sent on to Mr. L. F. Burrows, Ottawa, Secretary of the Canadian Horticultural Council.

### *Report of the Committee on Names and Varieties*

Believing that it is the chief function of the Committee on Names and Varieties to bring to the attention of members of the Horticultural Societies of Ontario, through this Association, the best varieties of horticultural plants, and especially, the newer or not well known sorts, your Committee has this year, prepared lists of the best varieties of primulinus gladioli; notes on other good gladioli, mainly novelties or comparatively new sorts; notes on newer paeonies, and a list of hardy lilies, these being contributed by H. L. Hutt, W. E. Saunders, Miss M. E. Blacklock and Miss I. Preston, members of the Committee.

Last year, there was considerable discussion in regard to the registration of plants and this Committee was to further the scheme of plant registration, as much as possible. We are pleased to be able to report that the registration of horticultural plants which, up to this year, had been fostered and put into practice by the Canadian Florists' and Gardeners' Association, has now been undertaken by the Canadian Horticultural Council, and it is expected that during 1923, a system of plant registration will be perfected which will be of great value in bringing into notice new and worthy varieties of horticultural plants and a means of encouragement to those who originate and introduce new plants and who, too often in the past, have received little recompense for originating plants of great merit. Fuller particulars in regard to registration will be found in a paper on this subject presented by the Chairman of this Committee at this meeting.

## PRIMULINUS HYBRIDS

By H. L. Hutt, Georgetown

The introduction of gladiolus primulinus from South Africa a few years ago has given to flower lovers a host of floral treasures of wonderful grace and beauty. This vigorous growing species with its insignificant but bright yellow flowers, when crossed with the large and varied coloured varieties from other species has produced a race of hybrids remarkable for their vigorous growth, graceful airy spikes and delicate blending of colours in the blooms.

The earlier hybrids were all more or less hooded, the upper petals drooping and tending to close in on the centre of the flower and the colours were mostly of yellowish and orange shades. Later introductions have much more open flowers, and the range of colours has widened to such an extent that the hybridist may look for almost as much variety as has appeared in the other types.

Island Park, Toronto.

Unfortunately, many of the plant breeders have been too quick to give names to their earlier introductions, and as a result we have scores of varieties listed in catalogues which never should have been named. With a view to finding a few of the best of the many named varieties, we grew side by side last year, sixty-eight of the varieties most commonly offered in growers' catalogues. The following list is our selection of the best twenty-five. Of course such a test is by no means final, but it indicates where to look for some of the really fine ones.

The bulbs were planted May 12th. The varieties are listed in the order of their date of bloom:

*Bloomed the first week :*

July 17th, Bobolink (Kunderd) Orange tinted yellow, well open.
" 19th, Maiden's Blush (Grullemans) A dainty shell pink.
" 21st, Arlon (Kunderd) Bright salmon, red throat.
" 23rd Twinkles (Kunderd) Tall salmon rose, ruffled.
" 23rd, Argo (Kunderd) A tall dainty pink, well open.

*Bloomed the second week :*
July 24th, Firefly (Kunderd) Rich deep scarlet, not large but showy.
" 25th, Yeoman (Kunderd) Large dark salmon, ruffled.
" 26th, Orange Koenigen (Fitzer) Tall, large rich orange.
" 27th, Mildred Pittman (Brown) Dainty pink, darker and later than Maiden's Blush.
" 27th, Alice Tiplady (Kunderd) Large orange saffron, well open.
" 28th, Clio (Kunderd) Very tall orange with yellow lined throat.
" 28th, Linton (Kunderd) Tall, salmon rose, much ruffled.
" 29th, Myra (Kunderd) Tall salmon over yellow, pink throat lines
" 30th, Spica (Kunderd) Bright rich red and yellow, ruffled, fine.
" 30th, Sirius (Kunderd) Large dark salmon, rich throat, ruffled.
" 30th, Topaz, (Kunderd) Salmon pink and buff.
" 30th, Rosalia (Kunderd) Bright yellow and pink, ruffled.
" 30th, Butterfly (Kunderd) Very tall, large salmon and yellow ruffled.
*Bloomed the third week :*
July 31st, Ming Toy (Kunderd) Tall, large flowers, buff yellow.
Aug. 1st, Dawson, (Brown) Pure deep yellow, one of the best yellows.
" 2nd, Arden (Kunderd) Tall, large flower, many open deep watermelon red.
" 3rd, Ramona, (Kunderd) Yellow blush pink, golden throat, ruffled.
" 4th, Gold Drop, (Kunderd) Large, ruffled, light yellow, red line on petals.
*Bloomed the fourth week :*
Aug. 7th, Eden (Kunderd) Light salmon.
" 7th, Sonia (Kunderd) Bright red.

## NOTES ON THE NEWER GLADIOLI

W. E. Saunders, London

Not being connected with a Government institution having the opportunity of spending other people's money, the newer Gladioli are largely in the air for the writer. Prices of ten, twenty, fifty and even a hundred dollars do not tend to popularity, and it would seem that no flower is likely to be worth such figures, and some that have been offered at high prices in the past, have turned out poorly when bought later on.

So, this report has to do with varieties such as an ordinary plutocrat of the woodpile might purchase without exhausting his pile of dough at one fell swoop.

Among the whites, White Wonder (Kemp) was very fine, though not as fine as I have seen it. Carmen Sylva (Hoeg) pleased me best in my own garden, while Baronne d'Ivoley (Lemoine) and Diane (Lemoine) were both very attractive and worth further care.

Lavenders and lighter include Louise, which has a lovely colour, though the spike could usually be improved. Marechal Foch (Holland) and Canadian Queen (Groff) are very fine, and nearly the same colour. Canadian Queen gives a smaller flower and a better spike, but the flowers of Marechal Foch are of wonderful beauty.

Light flesh pinks include Pink Wonder (Kemp), Leota (Coleman) and Louvain (Groff). The first-named deserves its name, and the gratified gardener gasps his delight at the wonderful first flower, but the spacing on the stem may be insufficient to show the full beauty of the spike. Leota and Louvain are extremely similar, and both are very fine. Leota has the larger flowers with a pale pink blotch, but my spikes were not tall enough to satisfy a critical mind, and Louvain, though smaller in flower is so much taller that it seems a preferable variety. Mrs. Dr. Norton comes nearly in this class though it is light and has some tint of yellow, but it ought, from now on, to be quite extensively planted. In previous years, the cost was high, but it is being offered this year around twenty-five cents and next year should almost join the ten cent class, and it is difficult to imagine a more beautiful object than a well grown spike of this variety. The flowers are placed far enough apart on the stem to allow their full beauty to be seen, and everyone that grows it gets enthusiastic.

Mrs. Bothin (Diener) continues to have many admirers, and is good enough so that it will be grown in quantities and drop in price. Personally I prefer it to Mrs. Pendleton though the flower is smaller, but the delicacy of colour pleases most people better. Bothin is far better than Mrs. Walsh by the same grower. His Mrs. Douglas exhibited splendid spikes at the St. Thomas trial grounds, but the price(five dollars) is out of reason and most people will await a reduction of 75 or 100%. It is coloured much after the style of Jack London (Diener), but with much more pink and less buff.

Gladioli showing intense blotches are of the "Lemoinei" type, and Lemoine himself stands near or at the top in this class of flower. His Etendard is the most brilliant and striking of all, a wonderful glowing cardinal on a flower almost pure white. The blotches are extra large, and many people think, with the enthusiasm of a first sight, that it is the finest they have seen. Certainly it is a splendid variety. La Couronne, also Lemoine's has a darker blotch, also on a white ground, and its special attraction is its extreme floriferousness. One bulb in my garden gave about sixty flowers, on two shoots. One shoot had a triple spike and bore thirty-nine flowers. It ought to be a good seed parent. Charlemagne (Lemoine) is a rather dull red with large blotch, and not a very good flower, but made a grand spike and an enormous bulb with a large quantity of bulblets. A dear friend once commented to me on the Wolf River apple, saying that it was like Ben Davis, only "worse," because there was more of it; and, judged by that standard, Charlemagne ought not to be very desirable, but as a seed parent it should have much merit.

Of yellows, Golden Measure (Kelway) was the most prized, giving a five foot stalk, while Gold (Hoeg) lighter in colour (almost as much so as the well-known Flora) was rather short in the stem. The colour, however, was very fine and highly commented on by visitors.

Dawn (Groff) and Prince of Wales still stand at the head of the Salmons. To my mind the Groff variety is without a peer, though one can pay a lot of money for "World-beaters" which turn out to be poor dubs when the price is considered. There is a delicacy about the colour of Dawn that I fail to find in the other varieties.

Years ago, Lemoine sent out a deep velvety garnet gladiolus under the name of President McKinley, and to this day its colour stands unrivalled. The much touted Purple Glory (Kunderd) gives a much finer spike and is certainly a handsome thing, but if it only had the rich velvety colour of McKinley it would be a hundred per cent. better. What a pity, then that McKinley gives almost the poorest spike one can remember! It is to be hoped that seedlings may come from it with a real stem, and still preserving all the richness of the colour of the parent.

There are four grand reds that are worthy of mention. A. W. Hunt (Christy) and three of Groff's, Majestic, Empire and Armistice. Of these, Hunt is the lightest and may prove to be inferior to Red Cross, and Crimson Glow, but it glows with a splendid cardinal scarlet, and is certainly a fine flower. The three Groff varieties are very close together, and are of a deep crimson red with darker flamings near the edge of the petals, and the combination produces a grand effect when the sun is on them. It will be noted throughout these remarks that the creations of Mr. Groff stand very high, and are either at the top, or almost there, in every class and in every shade. As Canadians, we ought to take particular pride in these Canada-made varieties, and grow them at least as prominently and as much as the much advertised, but usually poorer kinds of American origin.

## SOME FURTHER NOTES ON THE NEWER PAEONIES

Miss M. E. Blacklock, Meadowvale

*Jeannot.* From some that have been planted three years there were some magnificent blooms in 1922. It appears to have a good constitution and to be a fairly free flowerer. In the American Paeony Society's 1921 symposium it ranks 8.9, which seems to be a fairly just appraisal.

*Rosette.* I prefer this variety to Jeannot because it is a little deeper in colour; at present it is rated the same as Jeannot (8.9), but the next symposium may see it go higher.

*Ginette.* This ranks 8.8, only one point lower than Jeannot and Rosette though it is nothing like as beautiful as either.

*Suzette.* To me this is one of the most attractive of this tufted type of paeony, to which the above three belong, probably the reason we have heard so little about it, is that it originated in 1911, before the big boom in paeonies began. It only ranked 8.0. Ginette should change places with it. It is a good rich pink with large flowers on strong stems.

*Clemenceau.* This appears to have great promise, reminding one of Raoul Dessert, itself a king amongst paeonies, only Clemenceau is a little flatter in shape. These notes are made from plants put in in 1920, so it is too soon to tell just how good it may prove to be.

*Candeur.* My notes say, "of the Germaine Bigot type, good, but Rosette is best of that type."

*Auguste Dessert.* This did not appear to thrive very well in 1922, and only gave small imperfect blooms no better than it had the year before, so my hopes of it proving specially good have not yet been realized; 1923 ought to test it fairly.

*Longfellow.* This variety excelled itself this year and fully justified its high rating (9.0). As a single specimen it is not especially impressive, but several plants together make a mass of the most glowing colour.

*Victoire de la Marne.* A tall, upstanding, very striking paeony. The colour, a magenta with silvery shadings, is not perhaps very beautiful in itself, nevertheless, the effect is good and is attracts universal attention.

*Philippe Revoir.* To see this variety at its best, one has to see it growing. The sun puts a ruby glow into its petals that makes them a gorgeous colour. We had only one plant large enough to bloom, but it caught the attention of everyone that saw it. The bloom is not extremely large, but it is wonderfully effective.

*Tamatbako.* A single Japanese paeony, with delicate pink guard petals and soft golden petaloid stamens, is lovely beyond all telling.

*Mikado.* Also a single Japanese; is a very beautiful red with rich yellow petaloids.

*Tsani-Gidui.* Another single Japanese; is a lovely single pure white with yellow stamens on very long filaments, and the anthers peculiar.

*Marguerite Dessert* is another exquisite single (not of the Japanese type), the large white petals being covered with minute pink dots which give them a delicate pink tint. They are crowned with golden stamens.

I notice that the Japanese type take a longer time than the ordinary paeony to recover from dividing and moving. With me they seldom, if ever, bloom the first year or even the second, but the third year rewards one's patience, so in 1923, I hope to be able to make notes of a good many new varieties planted in 1920.

## HARDY LILIES

Miss I. Preston, Secretary of the Committee

Lilies are a class of plants which are not grown nearly so much as they should be. All of them are beautiful, and many quite easy to grow. The following have all been grown at Ottawa and are recommeded.

*L. Auratum*, the golden rayed lily of Japan, half-hardy, height two to four feet, large white wide open flowers with gold bands in the centre of each petal, dotted crimson. August and September.

*L. Batemanniae*, an upright flowering lily beautiful apricot shade without spots. July and August.

*L. Candense*, native Canadian lily with open bell-shaped flowers, yellow or orange, spotted.

*L. Candidum*, Madonna lily, southern Europe, pure white, June-July.

*L. Concolor*, China and Japan, upright star-shaped flowers, orange crimson. July.

*L. Croceum*, Orange lily, southern Europe, upright flowering red gold, generally spotted. July.

*L. Elegans*, Japan, much like Croceum only smaller.

*L. Hansoni*, Japan, orange martagon, bleaches slightly in full sun. June.

*L. Henryi*, China, orange yellow speciosum with a few brown spots, bleaches slightly in full sun. Hardy. August.

*L. Martagon*, the Turk's Cap lily. There are many varieties of this, the most beautiful being the white one, *L. Martagon Album*, June-July.

*L. Monadelphum Szovitzianum syn. Colchicum* is a beautiful early flowering yellow lily from Caucasia. June.

*L. Pseudo-tigrinum*, China, orange red tiger lily like flowers. There are no bulbils in the axes of the leaves. July.

*L. Regale*, China. This is without doubt the best lily for the garden introduced in recent years. The white tubular flowers flushed with rose outside and yellow in the throat, are delightfully fragrant. The plant is hardy and will grow in ordinary garden soil that is well drained. As the bulbs are raised from seeds, the height of the plant, number of flowers and the amount of colour on the petal vary a great deal. June-July.

*L. Speciosum*, Korea, the blooms of this lily are frequently spoiled by the bad weather as it blooms very late. White reflexed petals beautifully marked with pink. September.

*L. Superbum*, American Turk's Cap lily. Reddish orange reflexed petals with dark spots. June and July.

*L. Tenuifolium* Siberian Coral lily. Hardy, bright scarlet martagon-shaped flowers. June.

*L. Testaceum, Syns. excelsum, isabellinum.* The Nankeen lily is supposed to be a hybrid as it has never been found in nature. The petals of the flowers are reflexed and of a pale apricot colour with faint dark spots. June.

*L. Tigrinum splendens*, China and Japan. The tiger lily seems to flourish every where and is very effective in the garden. Flowers deep orange red, spotted thickly with purplish black. July-September.

*L. Tigrinum flore pleno.* The double flowered form is also worth growing.

*L. Willmottiae*, China. This lily like L. Regale was introduced by Mr. E. H. Wilson a few years ago. The flowers resemble those of L. Pseudo-tigrinum, but the habit of the plant is entirely different. The stems are furnished with a multitude of narrow leaves of a beautiful deep green colour topped by a spike

of from 10-30 bright orange scarlet turncap flowers, carried on pedicels that droop and give the plant a distinct appearance. Hardy, June-July.

Mr. Roden, Trophy Craft Company: You have probably noticed on display here yesterday, a decorative shield which is part of the work in which we are engaged. Our business is to design shields and medals and prize cups of every description. In preparing this, we had in view that you might be interested in something a little different from your usual awards, and which may be produced in any fabric, for flowers, that may be on exhibition for awards. These shields may be given as competition shields from year to year, the winner after a certain period of time becoming the possessor. We also make this in smaller sizes to suit individual needs.

We all love flowers, but, unfortunately, flowers fade. This shield is a permanent work, and whatever it is used for, could be carried on down for ages.

Phlox Subulata, corner of perennial border.

As soon as your committee which has charge of this matter are ready to discuss it with us, we will be ready to give them full information.

T. D. Dockray: I am very strong for the holding of horticultural exhibitions, especially by the half-dead society. I have known such to increase in effectiveness in their community by the advertisement they receive from the holding of shows.

You can get the ball rolling by holding a show in May. Hold it in the show windows of your town, if you like, but hold a show with some prizes—perhaps only the ticket that the person gets. It starts things going. It advertises your horticultural society early in the season. Hold another show. Then you are ready for your big show, and your society is kept before the people all through the season when people are growing things.

J. B. Spencer, Ottawa: Following the previous speaker who referred to shows, I wish to, through discussion at this meeting, draw out what is the best

plan for labelling varieties at shows. The Ottawa society holds six shows in the year and we try to conform to the regulation of naming the variety and attaching a label to each plant. The rule is carried out, but it does not fulfil the principle for which the rule is intended. The names are not legible, the tiniest little labels are used, and lead pencils are often used, and I wish to find out from the various societies the methods they are using, to try and bring about a uniform legible way of labelling them.

Miss Dixon, Hamilton: We have used a small metal form that stands on the table. It is about one inch long, and it is black enamelled and a card slips in it. It is almost necessary that this card be either typewritten or hand-printed, to be legible. It sits on the table by the receptacle. We have not this in general use, but we are trying it, and it has been quite successful so far.

They cost about three cents apiece, and we have not been able to get all our exhibitors to use them, but the exhibitor brings the card and puts it into the receptacle, a calling card is the correct thickness to use.

Mrs. Buckram, Perth: We use a black mounted paper with white ink. We buy that by the sheet and get a draftsman to print the name in white ink.

W. E. Saunders: The society in London has not been, parhaps, very scientific or very advanced on this. We have cards printed with the name of the Horticultural Society on them, with a space for the name of the grower, and one for the name of the plant, and we ask them to have these things filled out as legibly as possible. We have found it fairly practical.

J. B. Spencer: How are those cards distributed to the members?

W. E. Saunders: Those cards are kept in bulk on the table, and anybody is welcome to get them, and it is usually the duty of some of us who know plants pretty well, to go around and name those that have not been labelled.

Prof. Macoun: My suggestion would be for each society to buy a quantity of those white paper tags with string on them, and supply the members at cost with those. Then everything would be labelled with this tag, and all be alike. They would, of course, not be as legible as printed names.

Dr. Baldwin: I heard Mr. Rolph speak of the way they do it at Markham. They get a label from the Royal Horticultural Society, showing the name of the plant, the exhibitor, and the award of the judge, and there is afterwards a complete record on the label.

J. B. Spencer: There is an entry ticket also to what you have reference, but it would not name an individual specimen in the group where they consist of different varieties.

J. E. Carter: We find that the best way is to have the form sent to the secretary, showing what each person desires to enter, the class and the section. We have cards then printed with the section and class, ordinary cards, probably four inches by two inches, and the secretary makes them all uniform by putting on the grower's name, section, class and variety, and we find after a considerable experiment, that it is the only way in which you can have uniformity, and give the proper information.

Mr. Heal, Galt, said they used something the same as Mr. Carter, their cards are printed with the section, and all the secretary has to do is to fill the name in of each plant.

The chairman suggested that next year they bring their exhibits of labels and tags with them and have a corner in the room.

Several members expressed the wish that the time of the annual meeting of branch societies be changed to some time in October or November.

MR. GILCHRIST here drew attention to a cut from a catalogue, which called a certain specimen "Multi Floris," which in reality he said was nothing more nor less than an ordinary hyacinth mother plant. He scored the practice of selling certain bulbs, etc., under high-sounding names on the part of foreign firms, for fancy sums, terming it "humbug." What was necessary, he said, was to cultivate better, there was altogether too much talk nowadays about organization and efficiency, and too little of the efficiency applied to better cultivation.

### GARDEN COMPETITIONS.

MR. SCOTT, Galt, then gave their experience with Garden Competitions. Two years ago an enterprising citizen offered $20 in cash for prizes for this work and this year Mr. Goldie, of the Goldie, McCulloch Co., has donated a cup to be competed for, which must be won three years to become the property of the person winning it. Last year we distributed about $34 in prizes for this department and we had about 20 entries.

Regarding the workings of our society: We have, perhaps, not a very large attendance at our annual meetings, but we always have more than enough to do business. We had between five and ten per cent. of our members out on one of the stormiest nights this winter. We had plenty of discussion and deep interest evinced. Since that time we have had two meetings of our board of directors, and have made pretty good progress toward our spring and summer work. Last year we had three shows, tulip show in the spring, then the paeonies, then our annual show, and we felt our annual fall show was very much helped by these earlier shows in keeping the interest alive.

At the meeting held on Wednesday night by our directors, we decided to purchase a society cup, to be competed for annually, but never to be won by any person permanently, and which will be given to the winner and held by him for one year. We felt that this would increase the number of exhibitors and the interest.

Regarding the city beautification, we received from the city council during the last year $400 of a grant, but we spent over $500 on city beds, and on the decoration of our streets, and we had the commendation of all our citizens on the work, and we find that we receive greater support, not only from the city council, but also from the members. Our membership last year was 508. Two or three years ago we had a rose show, carried on by a separate committee. Last year, unfortunately, this committee did not function. This year we are confining our premiums to gladioli, roses, paeonies and the bulbs in the fall.

One of our difficulties is to arrange our prize list to meet the needs of both professional and the amateur grower, and I would like to have the opinion of the convention as to what constitutes a professional and what an amateur, or whether the professional should be eliminated in the interests of the amateur. We distributed $75 in prizes among the public schools, and we are making progress not only in the cultivation of vegetables, but also in that of flowers.

LAURENCE BALDWIN: In regard to the award of the sweepstake. I would advise that the award be given to the person scoring the highest percentage in his own class. If you make simply an award on the number of marks the professional has got it in every way.

MR. WELLS, Preston: A professional, in my opinion is such if he is a grower and seller of vegetables or flowers; if a private individual was employing a permanent expert gardener, he would be classed as a professional. An amateur is a man who does not make his living by it.

Mr. Scott, Galt: It seems to me that if this organization will take a definite stand on this matter, pass a resolution outlining what constitutes a professional and what an amateur, then the difficulties of the societies will be settled once and for all.

Mr. Ditchfield, Stratford: In our society, any man that employs and gets his work done, is a professional—the man who does his own gardening is an amateur.

Miss Dixon, of Hamilton, here gave some comprehensive definitions of the various classes as follows:—

*Open Class:* (a) Persons who carry on the growing of flowers as a commercial undertaking.

(b) Persons who employ the full time of one or more professional gardeners.

*Advanced amateur class:* An advanced amateur is one who may occasionally dispose of stock, but does not issue a catalogue.

An advanced amateur may exhibit in his own and the open classes only.

*Amateur class:* An amateur is one who does not employ a gardener for the care and cultivation of his plants and shrubs.

An amateur may exhibit in his own, the advanced amateur and the open class.

*Novice:* A novice is one who has not previously won a prize.

Miss Dixon remarking that they used the term "open class" in place of the term "professional."

Dr. Baldwin said Toronto closely followed those same specifications as followed by Hamilton, but in the advanced amateur he felt a little should be added to it; he may occasionally dispose of stock, and he maintains his amateur status so long as the money he receives is not greater than he expends in the purchase of new stock.

A Hamilton member, apropos of the cleaning up suggestion, made the remark that Hamilton devoted one full week to that purpose.

The result of the election of officers will be found on page six.

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## REPORT OF RESOLUTIONS COMMITTEE

Mr. Carter then read the report of the Resolutions Committee:—

1. Moved by Rev. G. W. Tebbs, and seconded by Benj. Johnson, "That a list of the presidents and secretaries of the Ontario horticultural societies be printed in the annual report and that a copy of this resolution be forwarded to the Minister of Agriculture."

2. Moved by T. J. O'Rourke, Woodstock, and seconded by E. M. Davidson, Elora: "That this convention appoint a press committee consisting of at least three members, whose duties shall be to provide for publication, through properly organized sources, of all matters pertaining to the work of this convention during its session, and that the secretary be requested to ask each person giving a paper to bring a synopsis thereof." Carried.

3. Moved by H. Occomore, seconded by R. M. Motherwell, "That we, the delegates of the Ontario horticultural societies assembled in convention in Toronto, respectfully beg to submit to the Hon. Mr. Motherwell, Federal Minister of Agriculture, the following resolution for consideration: 'Whereas, in view of the increasing interest in the culture of nut trees as food producing, and ornamental trees and of the great increase in the volume and value of nuts imported into Canada for domestic consumption, we would suggest that a

competent man be appointed to investigate the nut-producing possibilities of Canada, with a view to determining the most suitable species for the various sections of our country, and encouraging the wider planting of the best hardy and exotic species'." Carried.

4. Moved by W. J. EVANS, and seconded by J. M. PEAREN: "That the incoming officers and directors be requested to take into consideration the advisability of establishing an official horticultural publication." Carried.

5. Moved by J. M. PEAREN, and seconded by W. J. EVANS: "Whereas, this convention desires to express its sincere sympathy with our fellow citizens in the devastated area of Northern Ontario, through their great loss sustained in the terrible holocaust which occurred during the past year, be it resolved that the various horticultural societies throughout the Province be requested to assist our northern sufferers by donations of seeds, plants, etc., that their homes may be made bright and cheerful during the coming summer. Carried.

6. Moved by H. OCCOMORE, seconded by A. J. MIDDLETON: "That this association accept membership in the Canadian Council of Horticulture, and that a representative be elected to represent this association on said board annually." Carried.

7. Moved by MISS YATES, and seconded by H. HARRIS: "That the president appoint a legislative committee, consisting of five members, to have in charge all legislative matters affecting this association." Carried.

Upon question as to whether this would be a standing committee, the Chair said yes.

8. Moved by R. M. MOTHERWELL, seconded by W. FOUNTAIN: "That on account of our large increase in membership, we ask the Ontario Government for an increased grant, and the legislative committee be instructed to present our case to the Ontario Government." Carried.

9. Moved by PHILIP LOVE, seconded by FRANK BLAIN: "That the legislative committee be asked to amend the constitution so that district No. 3 be divided, and that the districts of Kenora, Rainy River, Thunder Bay and Algoma, be considered one district; and that the balance of the present district be created a new district, and that a new director be appointed for said district, and that the directorate be empowered to further sub-divide any of the districts where it deems proper to do so." Carried.

10. Moved by W. P. BAILEY, seconded by W. J. EVANS: "That considering the present and the future necessities of this association for funds for essential purposes, which include educational and developing movements, we recommend to this convention that the treasurer be instructed to assess each member of the horticultural societies, one cent for the fund suggested."

Carried.

## INTRODUCTION OF THE NEW PRESIDENT

MR. MCKAY thereupon retired from the presidency of the association, saying: "I have had great pleasure in performing the duties of the position. I am sure I am least of the worthy men that have filled this office, but I thank you for the privilege I have had, and whether in or out of office, the work shall always remain with me, and anything I am able to do for horticulture, I shall be only too glad of the privilege of doing. I thank you for all the courtesy you have extended to me in the office I have tried to fill as your presiding officer at this convention, and I wish in closing my regime to thank one and all for the courtesy and consideration you have shown.

Mr. McKay then introduced Mr. J. P. Jaffray of Galt, the new president, who asked Mr. McKay to keep the chair for the rest of the session.

J. P. JAFFRAY: "I want to thank the members for electing me to this office. I hope I will measure up to the requirements of this office and to the men who have gone before. We have had a number of very able men who have brought this association to the rank it occupies to-day. There is a large amount of work to do, as we are now convinced that we are the greatest force for the beautification of Ontario.

Before us lies the task of cleaning up Ontario from one end to the other, and making it the beauty spot of northern America. When I look back to the men who have occupied the presidential office from the first man, W. B. Burgoyne, who may be said to have borne the white flower of a blameless life, down to the gentleman that most of you know as our president, I feel that I am bearing a

Exhibit at Waterloo Horticultural Show.

great responsibility. There is a great amount of work for the horticultural societies to do. We are the spear-head of the greatest movement in beautifying Ontario, to make it the resort of the tourist. If every man and woman goes back to his and her society, and hammers away at the idea that all the unsightly spots in the villages and towns must be cleaned up, in the next five years, we will have results. We want the finest highways. We want American tourists to come to us, and we can do it, if we proceed as we have been doing in the last three or five years. Of course, we have not done all the work,—the pioneers of this association laid the foundation and we are gradually learning what can take place by an exchange of sentiments and views, we are learning what is necessary. We are facing a future that will bring us much more beauty in Ontario, and make our province permanently the banner province of the Dominion. I promise to do the very best I can.

## IMPORTATION OF DISEASED BULBS.

Wm. Hartry, Seaforth.

You will remember the report with respect to diseased bulbs, particularly gladiolus presented last year. At that time a good deal of discussion had been going on in some of the newspapers, which had brought the matter to the notice of almost all the horticulturists in the province, and it was brought up at the convention and your Committee was appointed to investigate and last year some 15 or 18 communications came to me with reference to that matter. In all these communications only some three or four even mentioned that there was disease coming, particularly in the bulbs from Holland, as was being charged in connection with reports in our public newspapers. The Committee was instructed to remain intact permanently for a time, to report again, and that is what I wish to do today.

Recently I have been writing to almost all the important gladioli growers and importers and made strict enquiry in reference to any disease that might come from either Holland or the United States or from Canada. The reports were very favorable all along, from all those sources until Tuesday afternoon when I called at the O.A.C., Guelph, and interviewed Prof. Howitt who is a very capable investigator, and who offered last year, if we would send any diseased bulbs to him, to write and tell us what was the matter. Prof. Howitt told me that someone had sent a report to him asking him to confirm it, that a certain shipment of bulbs from Holland had quite a percentage of diseased bulbs. He said he could not do that without making sure that the bulbs were diseased and what percentage were diseased. Prof. Howitt said that the bulbs were really diseased.

I wish to say something, however, about a personal examination of bulbs of mine. Last spring I imported quite a number for myself and some others, and in every instance those that came to us were beautifully clean, dry, splendid bulbs. I wrote to those parties I sent these bulbs to and they they have all reported to me that they found no trouble whatever. Now in some of the bulbs which I planted myself which I got from friends in Canada and some from the U.S. and some which I had held over from the previous year, I found about 1% of diseased bulbs. There was a small spot all over the bulb covering perhaps from one-fifth to nearly one-half of it. As I told you a year ago, I took some of those same bulbs last year and planted them in a new piece of ground entirely, and in the fall I took up some splendid bulbs without any disease whatever. So these may possibly have been spoilt in planting, as I believe some of them were this year, which I left a little too long and they got damp. Prof. Howitt says they will do that very easily. I would strongly recommend any of our societies anywhere who have any suspicion of diseased bulbs to at once send them to Prof. Howitt, of Guelph.

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## IDEAS AND IDEALS OF HORTICULTURE

A. H. McLennan, O. A. C., Guelph.

Taking a man, as I was, from a strictly commercial situation—because my last five years' work in the province has been entirely with commercial market gardeners, and before that I spent two years with the H. J. Heintz Company of Pittsburg in commercial work—it is rather a change for me to get into the strictly scientific and instructional side of the work. The first work

I did, I remember, was pruning an orchard in the village of Camlachie, in Lambton County. I was only five years old, and dad sent me up into a tree and told me what to saw. I attempted to go into the business world, but I never could get away from the old love of plants and plant life.

No matter how good a man is, he has to come back to the great outdoors where the Creator of all things has placed plants, animals and human beings, and if you study the thing from the scientific standpoint you will find that after all there is not much difference between the human being and the plant. You will find of course that the human being is more highly developed, but the plant is put into a sphere where possibly, if we were put, we could not survive.

It was figured, he said, that in the neighbourhood of 1,000,000 gladioli bulbs would be put in on the College grounds next spring. We made up, he said, a piece of land about 1¼ acres in extent last fall for that special purpose, and put them in in such a form that you can go out and study them and know where they come from. It was a lot of work, but it is worth while, because back of the horticultural work of the College should be the educational standpoint, and that is what we are trying to make it.

In the vegetable gardens a good deal of the stuff is grown that is used in the dining hall of the College, thus serving both as a means of education to the students as well as providing food for the staff and students. We have changed in the past season the method of handling work at the College. They used to have one single foreman in charge, but in checking up it was found that no one man could cover the ground satisfactorily, and we have gone back to the former way of four foremen—one for the landscape work and outdoor flower beds; one for the green houses; one for the vegetable gardens, and one for the orchard, and that gives the men on the staff a chance to get away when we are wanted to carry to whoever wants us the ideas that we have picked up in our work there and elsewhere. I believe it is good for one working at the College, teaching as he does there, to get away once in a while and rub shoulders with others.

Last fall, instead of a flower bed which always bothered me to explain to students of the landscape garden work satisfactorily, standing out as it did at the beginning of the campus, with nothing between, in talking it over with Mr. Tomlinson we finally came to the conclusion to get rid of it and spend the money we had been putting on it on other things, and we made last year a perennial border 8 feet in width, and Mr. Tomlinson figures on having a continuous bloom there throughout the season, and in the winter we have the shrubbery mixed here and there with the evergreens of the perennial type. Last fall we also made another perennial border.

The speaker then described the layout of some of the flower beds, two plants of the same variety, and a grass plot between each bed so that in walking along one does not need to get dirty feet in studying the beds. There are some 80 varieties there, some of the best that can be purchased. They had some good seedlings; some 160 varieties of irises, and that work would be continued so that one could get around the beds.

On one of the roadways this year have been put 5,000 to 6,000 loads of gravel, largely with the Horticultural Department teams and labour. The same applied to the Dairy Building.

The College grounds had been rearranged, a number of trees being cut, in order to provide athletic grounds, and also to carry out the scheme of being able to see every building on the grounds from the main building. The only two buildings which could not be seen from the main building were those

for poultry and apiary. Consequently you could stand at the one central spot and point out each respective building to the College visitors.

There are five sections in the Department of Horticulture: Fruit Growing, Vegetable Growing, Flower Growing, Landscape Gardening and Plant Breeding. Each section requires a certain amount of money. We have a certain amount of liberty and a certain amount of money for purchasing supplies and such like. We are trying to divide that as evenly as possible. When you figure that last summer we planted an orchard of 700 seedling apple trees, you can get some slight conception of what we have been doing.

This fall we started a new fruit plantation, and we are starting next spring a new raspberry plantation, putting out raspberry seedlings, and grapes and currant seedlings for students' instruction. We have a man there whose work is largely along breeding lines. We have planned out a good deal of work to be carried out. A large part of this work was started by Prof. Crow.

We have about 50 rose seedlings, one in particular a cross between the Killarney and Mrs. Lang, which promises to be worth while. It has the growth of the Mrs. Lang with the flower of the Ophelia. We have some 200 seedling irises and about 100 paeonies. In the greenhouse work we have laid out the collection so as to take care of the main crop of roses, carnations, sweet peas and various potted plants, largely from the idea of the student, but also from the idea of helping not only the amateur but the commercial men. In my experience on the Extension Service I came into contact a very great deal with some of the larger firms, and in most cases was able to give them a good deal of assistance,—in one case I remember they were troubled with certain irregularities in the heating, and we put in a registering thermometer (locked so that the men could not get at it), the curious part of it was after the thermometer was there you could find hardly any variation except what would be produced by sunlight in the daytime.

I hope to make the College a centre for horticultural education and extension work, because I believe therein lies a worth while field. My past training has been chiefly in commercial work, and I know it is the same with Mr. Tomlinson, because he was brought up in the same type school, where we had to take the knocks and bumps that come with such things, so that it will be carried along semi-commercial lines. If a thing is advisable commercially it is also advisable from the amateur standpoint, and I think you should be able to get as much out of it as the commercial men will.

These are my ideas and ideals. I wanted to let you know what we are doing. I have in mind the future. Possibly some of you are wealthy and can afford to buy anything that is put on the market, but most of us I think are after all of the ordinary every-day type who need the money, possibly for other purposes. In the College we should have—and it is possible to get it if we do some careful figuring—the best of everything that it is possible to get. It will take a few years to get some of it, but we have a good deal of extra stock that we are willing to trade or sell at a small fee, or trade with anybody who wants to trade, and in that way to get within a short time the best of everything so that you can come there and sit under a tree and enjoy it.

Another line of work that we are taking up is this; we had a man hired to do drafting work. Since taking hold of the department and talking it over with Mr. Tomlinson, we came to the agreement that we could use the money to better advantage, if instead of drawing plans, we would send that man out through the country when he was asked for, and have him while he was right there on the job draft a rough plan. It does not need to be exact, but near

enough so that any man with ordinary every day common sense can go to work and do the planting.

Some two or three years ago you will remember there was quite an agitation on in Toronto to get a Botanical Garden, which has eased down in intensity. In the meantime we figure to do the best we can at Guelph to carry it on, because we have a natural situation which can be made, without a great deal of cost, into a fairly decent Botanical Garden, and with that in view, Mr. Tomlinson and Prof. Howitt, the head of the Botany Department, have gone through the campus and made a list of trees that can be grown on it. You will find, if you will study it carefully, that ofttimes trees can be grown much farther north than one thinks, provided they are put in a situation where the wind cannot get at them. I noted last summer out on the prairie south of Winnipeg, trees growing in protected spots, which ordinarily could not have been grown in that locality. We have the protection because we have a great many evergreens and Maples and have a situation where we can, without a great deal of extra cost, make a Botanical garden that is not so far from Toronto.

Horticulture in Ontario has not developed nearly as fast as one would naturally expect from its situation. We have in the Province of Ontario, God's own country. The United States can talk as they like—I have been over most of their country, except the Pacific Coast. We have conditions here that will meet everything that a human being can ask for. We have got a lot of people interested in Horticulture, and it is up to you to get busy and push it harder than you have yet pushed it.

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## REPORTS OF DISTRICT DIRECTORS.

### District No. 2. H. A. Middleton, Lindsay, Director.

In reporting the work in my District, I am pleased to say that the Societies are continuing to do good work and are certainly a very great benefit to the towns and villages where a Society is in existence. The poorer citizens who cannot afford a summer vacation can enjoy the beautiful parks, streets, and homes kept up by and through the efforts of the Horticultural Societies.

The Government does not recognize the great benefits derived from the small grant given for this great work. The organization of any more Societies means the cutting down of the grants of the older ones, and I have felt that it would be an injury to the work in general rather than a benefit to start too many new Societies in my district.

Should the Government increase the grants as new Societies and the memberships grow, then the making our banner Province the healthiest, brightest and the most beautiful in the Dominion will be the result.

I look forward to the time when the Ontario Horticultural Societies will receive from the Government the necessary assistance to make the work a success.

### District No. 3. W. P. Bailey, Fort William, Director.

The results obtained during the season 1922 in this District are very gratifying.

Referring to the major society of the District, namely Fort William, we have closed the year with a membership of one thousand and thirty, (1030) including both Horticulturists and Vacant Lot Gardeners. Our flower show held the last week in August was about twenty-five per cent. bigger than any former exhibition, proving that there is a continued increase of interest in Horticultural

pursuits among our citizens. The quality of the flowers displayed was of a very high standard and we received considerable praise from Prof. MacLennan of Guelph, whom we were fortunate enough to obtain as our Judge.

During the past year we were also able to undertake a fair measure of civic improvement work, and with the co-operation of the city of Fort William Parks Board cleaned up and planted to flowers and shrubs several of the formerly unsightly corners in our business section. The companies owning and operating the bill boards on these corners co-operated with us to no small extent; put their bill boards back to allow for the gardens which we placed in front of them,

Perennial border, garden Lionel Godson, Niagara-on-the-Lake.

painted their boards and decorated them with lattice work and bird houses. We feel that the money and time spent in these efforts to beautify the city were well spent and results very gratifying, and it is our intention to carry out an even bigger programme this season.

The Society has also purchased considerable permanent equipment in the way of exhibition tables and decorative flower pots and it is our desire to eventually accumulate enough property of this kind so that we may be independent of any outside body when putting on an exhibition.

Barrie reports the best year in the history of the Society. They started their year well with an excellent illustrated lecture given by Mr. William Allan of Toronto, a horticulturist of wide experience in Scotland and Canada. In July they held a fine exhibit of sweet peas in the show windows of Mr. George Vickers' store, and this idea of using so prominent a place for this display proved of considerable value from an advertising point of view and created considerable interest. Later in the year an exhibit of gladioli filled the same windows and was highly praised by all who saw it.

On August 22nd there was an annual flower show in the Town Hall at which they had the best attendance ever recorded, the receipts being double those of the preceding year. Of special mention was the display of gladioli at this show, amounting to something over two thousand spikes, and the zinnias shown were of excellent size and great variety and brilliancy while snap-dragons, cosmos, petunias, phlox and dahlias came in for much praise. Their entries this year ran up to 427 and Mr. George Baldwin of Toronto acted as judge.

In the fall they instituted a membership campaign for 1923, and secured 364 members, and hope by planting time to have a membership of 500 which will be a very commendable record.

Sturgeon Falls organized a Society last April, and their report indicates a flourishing Society of 79 members for 1922 and a membership of 88 already paid up for 1923. They are to be congratulated on this good showing, and the keen interest shown by their Secretary, Miss Helen Richardson, will go a long way toward making their Society one of the most active in the North Country.

Sudbury also started their Society this year. Local interest was aroused when they put on a very successful Flower and Vegetable Show at which were awarded prizes consisting of six donated silver cups and money to the value of $157.50 for the best kept gardens as well as the best flowers shown. Their membership last year was 132. They have proven beyond all doubt that the North Country can produce a variety and quality of flowers unthought of some few years ago, and they are taking considerable interest in the planting of trees and shrubs, the aim of the Society being to permanently beautify their city by this means. Mr. C. Dorian, their Secretary, and the other Directors of the Society have the right idea, and their continued interest and work along these lines will rapidly prove the value that the Society can be to their city.

Port Arthur.—I am pleased to report that the city of Port Arthur last week at a meeting attended by thirty-five interested citizens formed the nucleus of what should develop into one of the premier Societies in this District. This city lends itself very readily to horticultural and landscape work, nature having been lavish in making it a very beautiful town site. They are to be highly commended for the step they have taken, and I am sure will have the hearty co-operation of the Department in Toronto and of all the members of the Fort William Society.

### District No. 4. Thomas D. Dockray, Toronto, Director.

Agincourt.—I visited this Society twice, lecturing and judging, and found the interest in improvement of home premises very keen. A great many of the best lawns, roadsides, trees and gardens were on the farms, showing that this Society is doing good work outside of the village.

Aurora.—I was able to visit this Society early in the season and lecture on improvements of the home surroundings. Successful exhibitions were held. This Society is making itself felt in the community.

Brampton.—I was not able to visit this Society. But I know that, owing to the large greenhouses for flowers and bedding plants in this town, the Society does not lack inspiration.

High Park.—This Society held two shows at which I judged. The members are going in more and more for permanent gardening, planting roses, flowering shrubs, paeonies, hardy perennials, &c.

Markham.—Markham held a very successful show, which was a great success.

Mimico.—There was a splendid display of dahlias and gladioli at Mimico which were afterward packed and sent to the St. Thomas Gladiolus Show, where they won many prizes.

Mount Dennis.—Situated in a neighborhood that may join Toronto, or join Weston, or become an independent city, this Society should do good work when municipal affairs are straightened out.

New Toronto.—Held the usual successful fall show.

Oshawa.—Early in the season I gave a lecture with slides in the moving picture theatre, attended by the boys and girls of the schools, who found the slides interesting. This Society was offering a very fair line of premiums to its members.

Port Credit.—At the fall show classes were well filled; quality high and competition keen. Great progress has been made in table decorations and arrangements of flowers in baskets and vases.

Richmond Hill.—The Society continued its campaign for the cleaning up of the roadsides, especially near the town. During the year eleven meetings were held, and a spring Flower Show in June and a flower, fruit and vegetable show in September. In May prizes were offered to school children for bouquets of native wild flowers for which there was keen competition. Membership in 1922 was ninety.

Riverdale.—I attended the annual meeting, and a month later lectured with slides. A real, live Society, doing splendid work in a part of the city rapidly building up.

Toronto.—Had several lecturers of high merit. Held a show where many of the newer irises were shown.

Thornhill.—I lectured here early in the season. A fall show was held as usual.

Weston.—This Society sent out splendid premiums to its large membership. The fall show was better than ever, and has become one of the big events of the county. The plots worked by the boys and girls were more numerous than formerly, with no deterioration in effectiveness.

Whitby.—Early in the season I gave a lecture here with slides which was fairly well attended in spite of bad weather. The Society held a grand exhibition and field day in September.

### District No. 6. Wm. Hartry, Seaforth, Director.

During the past year five new societies were organized in this District, all of which are sending in satisfactory reports. Wingham has already over two hundred members for 1923. Teeswater has a splendid report also.

We will add one thousand members to our report in 1922.

Our older societies are full of vigor, and are forging ahead.

Our own Society in Seaforth has big work planned for the year, planting beds at Town Hall, Post Office, and the Grand Trunk Station.

I visited in the fall four flower shows, and acted as judge at three of them. A good year in prospect.

DISTRICT NO. 5. REV. GEORGE W. TEBBS, BURLINGTON.

There have been few years in the history of our Association when greater enthusiasm, and better work has been manifest than in the year just closed in this District. In all the reports your Director has received from branches, without a single exception, our members have set themselves a very high standard, and most excellent work has consequently been recorded.

ST. CATHARINES.—A membership of 1104. Held their usual rose exhibition in June, and fruit, flower and vegetable show in September. Gave seeds to 800 pupils of the public schools, and over 1000 rose bushes as options. Beds were planted with shrubs at the entrance to Burgoyne Bridge, and new work done in Oakhill Park.

The Society circulated petitions to have a Parks and Cemetery Commission. The by-law carried, and members of the Society will be represented on the Board.

The Society prepared a Memorial Sun Dial to be placed in the Civic Rose Garden in memory of the late W. B. Burgoyne.

A slide library of local gardens is being prepared.

NIAGARA FALLS.—Carried on a "Clean-up" Campaign with the hearty co-operation of the City Council, Board of Health, Rotary Club, and Chamber of Commerce in the spring, which was most successful.

Has beautified many places in the city, including a large triangle at Bender Avenue, two beds at Palmer Avenue Park, two at the Public Library, and the grading and seeding of the lawn at Lewis Avenue Fire Hall. Two large flower beds will be planted in the spring. The Fire and Water Committee of the city Council paid for this latter work.

A splendid flower show was held in Queen Victoria Park in August, a red letter day in the history of the Society.

A garden competition was held, many valuable prizes being given including a silver cup donated by the Mayor. It is contemplated to hold a tree planting campaign during the coming year, and in connection with it the cleaning, pruning and spraying of the trees of the city.

ROCKWOOD.—A membership of 97. This little Society during the year distributed 122 trees, 157 shrubs, 54 climbers, 68 roses, 600 flowering plants, 1200 gladioli, and 2500 Holland bulbs. They have taken over the care of the Soldiers' Memorial plot and flower bed.

HAMILTON.—Visits to the gardens of prominent horticulturists was a prominent feature during the year, no less than 800 people visited one of the gardens opened to the members.

Two Flower shows were held in the Armories, and surpassed any previous ones. There was an increase of 58 exhibitors. The autumn show was not even excelled by the Canadian National.

A booklet entitled "Bulbs and their Growing" was distributed to all the members.

DUNDAS.—Membership 313, an increase. A Juvenile membership to school children, 175 joined, the fee charged being 25 cents. The children received a box of plants to care for. Lectures were given during the year. The big work of the year undertaken by this society was the re-building of the boulevards of the town after the paving of the streets had been completed. Trees were also planted on the boulevards, 30 oriental planes, and 200 maples and elms. The grounds at the Armories were ploughed and 275 loads of earth drawn, levelled and made ready for seeding during the coming spring. Flower beds were planted in front of the Post Office and the Memorial Square

remodelled and planted. The old Union Cemetery on the highway near the entrance of the town has been taken care of, and an arch erected, and levelling and seeding provided for. This beauty spot overlooking the Dundas Valley will become a favourite place for tourists as the result of the work of the Society.

SMITHVILLE.—A young and enthusiastic society with about 100 members. Flower beds have been planted in the park. The "tricoma" is the favourite flower in Smithville. There has been a marked improvement in the home surroundings in the village as evidence of good work being accomplished. Space was given at the fall fair for an exhibit by the members of the Society.

GEORGETOWN.—150 members. Premiums were given to all the members, and 12 public beds were planted and cared for. The outstanding work of the year was the planting of 150 spirea on both sides of one of the best residential streets.

Allan Gardens.

GRIMSBY.—A membership campaign increased the total by 92, the membership being 245. The annual flower show excelled any previous one. Monthly meetings of the members have been held to discuss the cultivation and care of flowers. Three public beds have been maintained, and $336 have been expended in bulbs, literature and prizes. Lectures were also given to the members.

BURLINGTON.—An extension in members and in work accomplished has marked the efforts of this society during the year. Lakeside Park, between the Hamilton highway and the lake, has been extended, and a new park laid out by permission of the Toronto Power Co. adjacent to the Radial Station. Lawns have been made and beds planted with two large perennial borders. The plants were donated by members of the Society, and a grant in aid of this work of caring for these parks was made by the Town Council. A school garden competition was also held. Waste paper baskets and seats have also been placed in the parks, and a society lawn mower purchased. One hundred and thirty-three shrubs, 68 roses and 56 perennials were distributed as spring premiums, and one dozen Darwin tulips to each of the members and a grant of hyacinths made to the High School. A carload of manure was purchased from

Toronto and re-sold to the members. An annual flower show was held with 200 exhibitors. Public lectures have also been delivered during the year.

DELHI.—Very early in the spring we set out sixty maple trees. Thirty of them around three sides of the school yard, the balance on the streets. Made a large flower bed at west end of King Street, where there had for many years been a barren spot over-grown with weeds. Planted there three dozen cannas, one hundred asters, and half a bushel of dahlia bulbs. Many complimentary remarks were made on the beauty of this bed. For premiums we gave to every member the same thing, fourteen fine gladioli bulbs. Other years we gave a choice of plants or shrubs, but as we had just become a member of the Ontario Gladiolus Society, we took that way of increasing interest in it.

In August we had a flower show, and it was a great success. Every member who had anything to send, did so. Prizes were hyacinth, tulip and daffodil bulbs, which were ordered from Holland with the regular fall order. About a week before the Show a Moonlight Carnival (garden party) was held to raise money to improve our Park, which was for the last fifteen years a park in name only, with the exception of some beautiful trees. We cleared two hundred dollars. It was the largest garden party ever held in the village. In October the beds and walks were laid out according to a plan made for the Horticultural Society by Mr. G. W. Skinner, Grand Trunk Railway landscape gardener. The planting of shrubbery, etc., was all finished before the ground was frozen. The walks were plowed and then covered with cinders from the station yard. A large bed was made at the station yard where cinders had been taken out and planted with flowering shrubs. This makes the second large bed at the station. They are outlined with large stones. Beginning with October, we hold a meeting every month until the end of May. These meetings are well attended and are both entertaining and instructive. Our membership last year was eighty-four. This year we hope to make it over one hundred.

## DISTRICT NO. 8—F. E. BENNETT, ST. THOMAS, DIRECTOR.

During the year your representative had the pleasure of giving some forty illustrated addresses in District No. 8, and in other parts of the Province. Visits were made to Horticultural Societies, Chambers of Commerce and other institutions in Plattsville, Bridgeburg, Wallaceburg, Toronto, Galt, Highgate, Aurora, Orillia, Beamsville, Niagara Falls, Walkerville, Lindsay, Wyoming, Watford, Mimico, London, Ayr, Strathroy, Guelph, Welland and other places. Great interest was manifested in the work of horticulture at all the meetings.

A great deal of good work was done in aiding societies in the district by way of correspondence, and we feel sure that taken as a whole, this district will measure up well in the line of progress when 1922 totals are assembled. It certainly is gratifying to find the interest being taken by the rural districts, and another year will find a large number of township societies organized throughout the different counties in the district.

The beautification of farm homes is most vital in keeping the rising generation from leaving the farms and going to the larger centres of population, and we believe that the Horticultural Societies are exerting a great influence in making the children of to-day more contented by having the home surroundings more beautiful.

We regret that the secretaries of several of the Societies have made no report as to their progress, but as a rule those who did, reported favourable. The London Society especially, has made splendid progress in increasing its

membership. In fact, they have done good work in all the departments. Woodstock and Strathroy report increases.

The St. Thomas Society, while not reporting as great an increase in membership as had been hoped for, reports a gain over 1921. However, the enthusiasm was greater than ever and during the year several talks have been given to Church organizations and School associations with a view of creating a greater interest in the buildings which they occupy.

One of the chief features of the work was the completion of the beautification of the station grounds and surroundings of the London & Port Stanley Railway. Many new varieties of flowers have been added to the trial plots. The perpetual window display of seasonable flowers was carried out in store windows. Educational collections of gladioli were sent to the Canadian National Exhibition and other fairs, and the St. Thomas Society led in the winnings. The Municipal Council donated $1,000 to the Society in appreciation of the splendid work done.

Several of the smaller towns are gratified with the work accomplished in beautifying public buildings and creating small beauty spots, the local Council in most cases expressing their appreciation by making a grant.

The Annual Joint Meeting of the American Paeony and the Ontario Paeony Associations in London was a most successful event, as was also the first Annual Meeting of the Ontario Gladiolus Society in St. Thomas. As a result of the latter show, several Gladiolus Clubs have been formed in cities and towns throughout Ontario, and many splendid shows were held in the district.

From our observation, horticulture is spreading with wonderful rapidity, and we feel sure that within the next few years Ontario will be known throughout America as a land of "Sunshine and Flowers."

The Chairman then announced the Committee on Legislation as follows: W. J. Evans, Toronto, Convener; Messrs. Jaffray, Hallman, Nunnick, J. M. Pearen and Rev. W. M. McKay.

A letter of greeting from the Gardeners' Association was then read.

The delegates adjourned and met again at 4.15 p.m. in the palatial residence of Sir Edmund Osler, whose guests they were for the remainder of the afternoon. Much regret was expressed that Mr. William Allan, who has full charge of Sir Edmund's greenhouses and grounds had been taken suddenly ill the day before, and as a consequence was unable, as in former years, to point out and give the names of the beautiful plants that adorn these extensive greenhouses.

## ADDRESS.

Rev. W. A. Cameron, Toronto.

My subject is: "The Power of Vision in Human Life." There is more in the universe than sea and sky; there is more in suffering than agony and sting; there is more in the Bible than chapter and verse; there is more in the church than eloquence and finance; there is more in business than stocks and bonds. There is the presence and power of the invisible, and until a man has the power of vision that detects that, he is blind. One of our keenest religious leaders has declared that the classification of men with regard to religion will have to change soon. We shall not divide them into Catholic and Protestant, Presbyterian, Baptist, Anglican and Methodist, but into the men who see and the men who do not see.

Thus I covet for all the seeing eye. I covet for all a quickening of faculty and enlargement of horizon. It means the annexation of a new universe which eye hath not seen and ear hath not heard. That is, the fact of vision opens a man's life. It is to the soul what the telescope is to the eye. It suggests to the ear the sound of heavenly movements and sets the mind dreaming of an infinite progress and a new earth and a new heaven that are yet to come. To the ordinary man who knows nothing of natural science how small and poor a world this is compared to the world that was known by a Kepler or a Darwin. The mason sees in a stone only something to build with, but the geologist sees written in its petrifactions a story older than Adam's. The child picks up a bone in the crumbling limestone, and to him it is nothing but a bone; but a Professor Owen can sketch from that bone the plan of a primeval world. Where you see only a blind worm spoiling your garden path, Darwin saw a silent worker creating the soil of the continents. What makes the difference between you? The eyes of his understanding had been opened; he saw worlds hidden from you and dreamt dreams you could not conceive. Hence it follows that the measure of a man is the measure of his sight. Man is pre-eminently the creature who sees. Other creatures can look in stolid silence on the stars, but no other can watch them with intelligent curiosity and read their secret. Other eyes can watch the round of earth and sky, but no other can perceive what we see, or read the wonder of the flower, the miracle of the light. John Ruskin never uttered a truer thing than when he said: "There are a hundred people in the world who can talk for one who can think, and there are a thousand who can think for one who can see." Who is it that men have delighted to honour above all others? It is the prophet, the poet, the seer, the man whose vision pierces furthest. What is it poets have said of man when they would have honoured him? It is that he is an onward-looking creature. "He looks before and after." He is amid the dead wastes of matter. What Wordsworth has magnificently called him:

> "Thou eye amongst the blind,
> That deaf and silent readst the eternal deep,
> Haunted forever by the Eternal Mind."

Shortly before Ian Maclaren died, he lamented the fact that we are living in an age when the function of vision is depreciated and the faculty itself has almost ceased. He lamented that the great leaders are all gone, that there is no author for whose new book we watch as for the breaking of the day, no master rising in painting or in music to interpret modern life and to add new provinces unto the kingdom of art, no great scientist building upon the matchless

successes of the century that is gone; no young men seeing visions, no old men dreaming dreams. Perhaps this is altogether too pessimistic, and yet I am convinced that there is an element of truth in it all. Ours is a practical age and the multiplication table seems to be our creed. "Give us the facts," we say, "and beware of the visionaries." Of course, we must have the facts, but we must remember that there are facts which we shall never understand through seeing them with our eye, but only as we feel them with our souls. Mere sight will never satisfy. The man of mere sight looks at a poem and he sees so much printed stuff, but the man of vision looks at the same poem and sees an interpretation of life and perhaps of God. The man of mere sight looks at a painting and sees so much brilliant coloring, but a man of vision looks at the same painting and sees a window into eternity. The man of mere sight looked at the most perfect Man in the world and saw in Him a wine-bibber and a glutton, but the man of vision saw beneath the peasant garment Him who is invisible and confessed this prophet of Nazareth to be the Son of God. Such vision should come easy to you who work in God's great out-of-doors. You will appreciate the conception of W. H. Carruth in his little poem, "Each In Its Own Voice."

"A fire-mist and a planet,
A crystal and a cell,
A jelly-fish and a saurian,
And caves where the cave-men dwell;
Then a sense of law and beauty,
And a face turned from the clod;
Some call it evolution,
And others call it God.

"A haze on the far horizon,
The infinite, tender sky,
The ripe, rich fruits of the corn fields,
And the wild geese sailing high;
And all over upland and lowland
The charm of the goldenrod;
Some of us call it autumn,
And others call it God.

"Like tides on a crescent sea-beach,
When the moon is new and thin,
Into our hearts high yearnings
Come welling and surging in;
Come from the mystic ocean
Whose rim no foot has trod;
Some of us call it longing,
And others call it God.

"A picket frozen on duty,
A mother starved for her brood,
Socrates drinking the hemlock,
And Jesus on the rood;
And millions who, humble and nameless,
The straight, hard pathway trod;
Some call it consecration,
And others call it God."

STATEMENT OF MEMBERSHIP AND LEGISLATIVE GRANTS FOR 1921-23.

| Societies | Expenditure in 1922 on which grant for 1923 is based | Membership | | Legislative grants | | |
|---|---|---|---|---|---|---|
| | | 1921 | 1922 | 1921 | 1922 | 1923 |
| | $ c. | | | $ | $ | $ |
| Acton | 346 53 | 217 | 247 | 81 | 74 | 72 |
| Agincourt | 145 80 | 102 | 72 | 45 | 48 | 25 |
| Almonte | 334 01 | 138 | 155 | 75 | 44 | 58 |
| Alvinston | ..... | 52 | ..... | 28 | ..... | ..... |
| Amherstburg | 1,272 02 | 140 | 143 | 91 | 176 | 157 |
| Aurora | 1,090 34 | 498 | 600 | 139 | 169 | 202 |
| Aylmer | 1,277 94 | 176 | 193 | 210 | 159 | 165 |
| Ayr | 563 58 | 180 | 143 | 58 | 80 | 81 |
| Barrie | 884 25 | 319 | 312 | 177 | 133 | 139 |
| Beamsville | 238 67 | 112 | 121 | 75 | 40 | 42 |
| Belleville (organized in 1922) | 417 66 | ... | 394 | .... | 75 | 101 |
| Blenheim and Harwich | 498 26 | 242 | 105 | 183 | 117 | 69 |
| Bobcaygeon (organized in 1922) | 247 47 | ... | 111 | ... | 75 | 42 |
| Bothwell | 158 63 | 65 | 76 | 49 | 26 | 28 |
| Bowmanville | 221 30 | 153 | 146 | 50 | 52 | 44 |
| Bradford (organized in 1922) | 93 73 | ... | 91 | ... | 75 | 22 |
| Brampton | 261 21 | 172 | 137 | 84 | 72 | 47 |
| Brantford | 1,460 07 | 782 | 936 | 444 | 296 | 290 |
| Bridgeburg | 426 20 | 161 | 158 | 75 | 86 | 68 |
| Brooklin | ..... | 47 | ... | 47 | ... | .... |
| Brussels | 241 23 | 66 | 125 | 48 | 31 | 44 |
| Burford (organized in 1922) | 138 59 | ... | 75 | ... | 75 | 24 |
| Burlington | 547 83 | 123 | 151 | 58 | 57 | 80 |
| Cardinal | 242 01 | 80 | 83 | 75 | 34 | 38 |
| Carleton Place | 429 18 | 186 | 147 | 90 | 103 | 66 |
| Chatham | 4,522 33 | 1,152 | 966 | 800 | 759 | 625 |
| Chesley | 334 68 | 90 | 93 | 52 | 47 | 49 |
| Chesterville | 250 37 | 146 | 96 | 46 | 55 | 40 |
| Clifford | 710 64 | 148 | 77 | 139 | 111 | 87 |
| Clinton | 279 83 | 197 | 115 | 155 | 84 | 46 |
| Creemore | 265 62 | 91 | 137 | 75 | 34 | 47 |
| Delhi | 373 45 | 80 | 83 | 37 | 37 | 51 |
| Dresden | 392 01 | 111 | 103 | 23 | 61 | 56 |
| Drumbo (organized in 1922) | 90 96 | ... | 70 | ... | 70 | 19 |
| Dundas | 1,864 77 | 271 | 318 | 117 | 183 | 246 |
| Durham | 171 51 | 51 | 63 | 44 | 25 | 27 |
| Dutton and Dunwich | 347 39 | 186 | 104 | 131 | 97 | 52 |
| Elmira | 330 68 | 134 | 123 | 69 | 64 | 52 |
| Elora and Salem | 997 46 | 231 | 232 | 170 | 155 | 140 |
| Essex | 269 78 | 73 | 110 | 69 | 49 | 44 |
| Exeter (organized in 1922) | 315 63 | ... | 152 | ... | 75 | 55 |
| Falkland (organized in 1922) | 27 75 | ... | 32 | ... | 25 | 7 |
| Fenelon Falls | 292 21 | 56 | 63 | 55 | 36 | 40 |
| Fergus | 350 66 | 186 | 173 | 79 | 73 | 62 |
| Forest (organized in 1922) | 264 92 | ... | 125 | ... | 75 | 46 |
| Fort William | 2,207 31 | 1,207 | 1,018 | 552 | 441 | 383 |
| Galt | 1,999 38 | 574 | 508 | 325 | 309 | 288 |
| Gananoque | 473 57 | 377 | 212 | 85 | 120 | 81 |
| Georgetown | 365 87 | 134 | 119 | 102 | 72 | 56 |
| Glenmorris (organized in 1922) | 110 90 | ... | 68 | ... | 68 | 21 |
| Glencoe | 131 75 | 87 | 51 | 75 | 35 | 21 |
| Goderich | 207 50 | 145 | 179 | 67 | 49 | 47 |
| Grimsby | 518 66 | 147 | 242 | 74 | 83 | 89 |
| Guelph | 4,417 90 | 1,080 | 1,252 | 633 | 555 | 655 |
| Guelph Tp. (organized in 1922) | 287 04 | ... | 80 | ... | 75 | 42 |
| Haileybury | 880 75 | 77 | 220 | 67 | 64 | 126 |
| Hamilton | 1,883 60 | 1,002 | 796 | 501 | 445 | 316 |
| Hanover | 864 78 | 336 | 322 | 190 | 151 | 139 |
| Harrow | 326 28 | 89 | 105 | 75 | 35 | 50 |
| Hastings | 387 56 | 140 | 128 | 43 | 69 | 60 |
| Hespeler | 617 48 | 211 | 216 | 112 | 86 | 96 |
| Highgate | 222 40 | 92 | 51 | 75 | 35 | 31 |
| High Park | 1,093 82 | 549 | 623 | 240 | 203 | 206 |
| Hillsburg | 326 17 | 62 | 62 | 62 | 49 | 44 |

STATEMENT OF MEMBERSHIP AND LEGISLATIVE GRANTS FOR 1921-23—Cont.

| Societies | Expenditure in 1922 on which grant for 1923 is based | Membership | | Legislative grants | | |
|---|---|---|---|---|---|---|
| | | 1921 | 1922 | 1921 | 1922 | 1923 |
| | $ c. | | | $ | $ | $ |
| Ingersoll | 1,422 05 | 139 | 140 | 292 | 185 | 173 |
| Iroquois | 471 02 | 200 | 263 | 92 | 80 | 88 |
| Iroquois Falls | 689 58 | 98 | 99 | 75 | 112 | 88 |
| Keewatin (organized in 1922) | 349 45 | ... | 101 | ... | 75 | 51 |
| Kemptville | 468 98 | 319 | 196 | 76 | 120 | 78 |
| Kingston | 435 83 | 174 | 243 | 119 | 79 | 81 |
| Kingsville | 1,357 61 | 249 | 249 | 300 | 212 | 181 |
| Kitchener | 1,626 94 | 538 | 595 | 318 | 247 | 259 |
| Leamington | 1,029 33 | 328 | 336 | 78 | 165 | 159 |
| Lindsay | 2,733 21 | 213 | 340 | 372 | 282 | 343 |
| Listowel | ..... | 80 | ... | 71 | 85 | .... |
| London | 3,178 28 | 1,683 | 2,209 | 726 | 566 | 657 |
| Markdale (organized in 1922) | 72 66 | ... | 58 | ... | 58 | 15 |
| Markham | 453 41 | 135 | 135 | 35 | 60 | 68 |
| Matilda Tp | 397 55 | 103 | 177 | 75 | 32 | 68 |
| Meaford (organized in 1922) | ..... | ... | ... | ... | 75 | .... |
| Midland | 210 64 | 136 | 147 | 54 | 46 | 43 |
| Milton | 419 61 | 132 | 161 | 67 | 49 | 68 |
| Mimico | 1,330 13 | 361 | 797 | 75 | 150 | 256 |
| Mitchell | 351 02 | 110 | 214 | 56 | 45 | 68 |
| Mount Dennis | 559 50 | 86 | 172 | ... | 19 | 84 |
| Morrisburg | 1,091 59 | 313 | 392 | 119 | 170 | 174 |
| Napanee | 192 20 | 63 | 72 | 43 | 35 | 30 |
| Newcastle | 401 78 | 132 | 115 | 137 | 69 | 59 |
| New Hamburg | 214 01 | 50 | 71 | 37 | 24 | 33 |
| New Toronto | 791 65 | 156 | 180 | 119 | 118 | 110 |
| Niagara Falls | 1,287 81 | 587 | 536 | 309 | 204 | 215 |
| North Bay | 342 23 | 132 | 251 | 75 | 56 | 72 |
| North Blenheim | 312 69 | 61 | 91 | 19 | 47 | 46 |
| Norwich | 312 92 | 112 | 85 | 75 | ... | 45 |
| Norwood (organized in 1922) | 370 91 | ... | 92 | ... | 75 | 53 |
| Orangeville | 200 66 | 88 | 56 | 93 | 39 | 29 |
| Orillia | 784 97 | 250 | 347 | ... | 96 | 133 |
| Orono | 243 34 | 123 | 139 | 75 | 44 | 46 |
| Oshawa | ..... | 375 | ... | 77 | 113 | .... |
| Ottawa | 3,053 72 | 1,527 | 1,408 | 800 | 637 | 529 |
| Owen Sound | 2,173 96 | 408 | 522 | 158 | 269 | 308 |
| Paisley | 145 50 | 58 | 87 | 58 | 18 | 27 |
| Palmerston | 625 93 | 108 | 116 | 82 | 72 | 83 |
| Paris | 625 13 | 385 | 286 | 194 | 191 | 107 |
| Paris Road | 133 98 | 28 | 40 | 28 | 12 | 19 |
| Perth | 568 42 | 235 | 260 | 147 | 113 | 98 |
| Peterborough | 736 37 | 348 | 502 | 95 | 137 | 150 |
| Petrolia | 324 10 | 131 | 196 | 75 | 81 | 63 |
| Pleasant Ridge District (organized in 1922) | 81 58 | ... | 31 | ... | 31 | 13 |
| Port Credit | 316 42 | 152 | 161 | 51 | 75 | 57 |
| Port Dover | 315 60 | 123 | 123 | 66 | 48 | 51 |
| Port Elgin (organized in 1922) | 166 30 | ... | 102 | ... | 75 | 32 |
| Port Hope | ..... | ... | ... | 54 | ... | .... |
| Prescott | 321 50 | 140 | 130 | 105 | 61 | 52 |
| Preston | 782 53 | 224 | 274 | 75 | 110 | 123 |
| Puslinch Tp. (organized in 1922) | 112 48 | ... | 76 | ... | 75 | 23 |
| Richmond Hill | 245 74 | 87 | 90 | 47 | 35 | 39 |
| Ridgetown | 783 40 | 174 | 206 | 55 | 98 | 113 |
| Riverdale | 566 09 | 129 | 158 | 71 | 93 | 83 |
| Rockwood | 444 29 | 72 | 97 | 59 | 49 | 62 |
| Rodney | 283 75 | 87 | 59 | 76 | 68 | 38 |
| Russell | 78 65 | 67 | 39 | 20 | 20 | 13 |
| St. Catharines | 2,849 23 | 1,345 | 1,105 | 735 | 723 | 464 |
| St. George | 308 17 | 106 | 130 | 75 | 56 | 51 |
| St. Marys | 90 17 | 228 | 104 | 75 | 83 | 24 |
| St. Thomas | 15,671 21 | 2,046 | 1,861 | 800 | 800 | 800 |

STATEMENT OF MEMBERSHIP AND LEGISLATIVE GRANTS FOR 1921-23—Cont.

| Societies | Expenditure in 1922 on which grant for 1923 is based. | Membership | | Legislative grants | | |
|---|---|---|---|---|---|---|
| | | 1921 | 1922 | 1921 | 1922 | 1923 |
| | $ c. | | | $ | $ | $ |
| Sarnia | 1,452 02 | 274 | 397 | 109 | 217 | 213 |
| Seaforth | 647 08 | 221 | 190 | 177 | 128 | 97 |
| Simcoe (organized in 1922) | 131 89 | ... | 101 | ... | 75 | 28 |
| Smith's Falls | 666 75 | 103 | 204 | 102 | 72 | 101 |
| Smithville | 114 32 | 101 | 76 | 75 | 29 | 23 |
| Southampton | 263 13 | 128 | 138 | 52 | 72 | 47 |
| South Norwich Tp | 240 23 | 117 | 105 | 65 | 53 | 41 |
| Stirling | 237 92 | 100 | 109 | 54 | 39 | 40 |
| Stratford | 2,521 67 | 884 | 1,562 | 428 | 389 | 494 |
| Strathroy | 917 36 | 370 | 318 | 142 | 116 | 153 |
| Sturgeon Falls (organized in 1922) | 144 77 | ... | 79 | ... | 75 | 26 |
| Sudbury (organized in 1922) | 599 43 | ... | 132 | ... | 75 | 83 |
| Teeswater and Culross (organized in 1922) | 145 67 | ... | 86 | ... | 75 | 27 |
| Thessalon (organized in 1922) | 125 13 | ... | 59 | ... | 60 | 21 |
| Thornhill | 246 55 | 50 | 35 | 50 | 42 | 31 |
| Tillsonburg | 484 29 | 181 | 131 | 68 | 121 | 70 |
| Toronto | 2,586 02 | 534 | 647 | 300 | 265 | 371 |
| Tottenham (organized in 1922) | 66 55 | ... | 55 | ... | 55 | 16 |
| Trenton | 775 98 | 394 | 345 | 271 | 302 | 133 |
| Vernon (organized in 1922) | 149 44 | ... | 67 | ... | 60 | 25 |
| Wales | 43 15 | 90 | 40 | 75 | 29 | 9 |
| Walkerton | 470 79 | 232 | 262 | 98 | 91 | 88 |
| Walkerville | 473 14 | 210 | 288 | 108 | 110 | 92 |
| Wallaceburg | 1,563 36 | 336 | 342 | 287 | 185 | 217 |
| Walton | 242 54 | 147 | 119 | 77 | 61 | 43 |
| Waterloo | 992 09 | 109 | 613 | 71 | 55 | 195 |
| Watford | 568 24 | 99 | 189 | 75 | 56 | 87 |
| Welland (organized in 1922) | 613 63 | ... | 277 | ... | 75 | 105 |
| Westboro | 691 40 | 320 | 310 | 123 | 122 | 118 |
| West Lorne | 176 75 | 55 | 74 | 58 | 33 | 29 |
| Weston | 2,578 90 | 1,846 | 1,425 | 576 | 632 | 481 |
| Wheatley | 472 73 | 84 | 98 | 62 | 111 | 65 |
| Whitby | 256 42 | 104 | 146 | 52 | 44 | 47 |
| Wiarton | 195 12 | 81 | 113 | 49 | 25 | 37 |
| Winchester | 433 14 | 160 | 175 | 153 | 75 | 71 |
| Windsor | 1,782 97 | 424 | 1,154 | 176 | 197 | 356 |
| Wingham (organized in 1922) | 735 05 | ... | 113 | ... | 75 | 95 |
| Woodstock | 1,239 67 | 350 | 382 | 194 | 205 | 188 |
| Wyoming (organized in 1922) | 224 90 | ... | 86 | ... | 75 | 36 |
| Total | 123,489 85 | 37,357 | 42,535 | 19,587 | 19,669 | 18,140 |

ACTUAL RECEIPTS AND EXPENDITURE OF HORTICULTURAL SOCIETIES IN 1922

| Societies. | Legislative grant. | Municipal grants and donations. | Members' fees. | Gate receipts at exhibitions. | Total actual receipts. | For exhibitions. | For seeds, bulbs and plants and Civic Improvement. | For lawns and gardens. | Lectures and periodicals. | Officers' salaries. | Total actual expenditure. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ | $ | $ | $ | $ |
| Acton | 74 | ..... | 247 | ..... | 321 | ..... | 238 | ..... | 91 | ..... | 346 |
| Agincourt | 48 | ..... | 72 | 9 | 145 | 4 | 85 | 15 | 19 | ..... | 146 |
| Almonte | 44 | 30 | 155 | 33 | 290 | 56 | 179 | ..... | ..... | ..... | 334 |
| Alvinston | Retur | ns Inc | omple | te. | | | | | | | |
| Amherstburg | 176 | 175 | 143 | ..... | 1,326 | ..... | 1,218 | ..... | ..... | 50 | 1,272 |
| Aurora | 169 | 75 | 600 | ..... | 1,045 | 148 | 486 | ..... | 7 | 25 | 1,090 |
| Aylmer | 159 | 92 | 193 | ..... | 1,225 | ..... | 943 | ..... | ..... | 77 | 1,277 |
| Ayr | 80 | 53 | 143 | 174 | 635 | 144 | 202 | ..... | ..... | ..... | 563 |
| Barrie | 133 | 60 | 312 | 90 | 923 | 159 | 463 | ..... | 6 | 50 | 884 |
| Beamsville | 40 | 100 | 121 | 29 | 244 | 43 | 107 | ..... | 39 | ..... | 238 |
| Belleville | 75 | ..... | 394 | ..... | 542 | 157 | ..... | ..... | 141 | 30 | 417 |
| Blenheim and Harwich | 117 | 200 | 105 | ..... | 556 | ..... | 469 | ..... | ..... | ..... | 498 |
| Bobcaygeon | 75 | 35 | 111 | ..... | 300 | ..... | 244 | ..... | ..... | ..... | 247 |
| Bothwell | 26 | 45 | 76 | ..... | 162 | ..... | 132 | ..... | ..... | 10 | 158 |
| Bowmanville | 52 | 24 | 146 | ..... | 217 | ..... | 155 | ..... | ..... | 10 | 221 |
| Bradford | 75 | ..... | 91 | ..... | 167 | ..... | 86 | ..... | ..... | ..... | 93 |
| Brampton | 72 | ..... | 137 | ..... | 296 | ..... | 207 | ..... | 9 | ..... | 261 |
| Brantford | 296 | 125 | 936 | ..... | 1,358 | ..... | 887 | ..... | 2 | 300 | 1,460 |
| Bridgeburg | 86 | ..... | 158 | ..... | 441 | ..... | 400 | ..... | 11 | ..... | 426 |
| Brooklin | Retur | ns Inc | omplet | e. | | | | | | | |
| Brussels | 31 | ..... | 125 | ..... | 240 | ..... | 228 | 4 | ..... | ..... | 241 |
| Burford | 75 | 5 | 75 | ..... | 206 | ..... | 119 | ..... | ..... | ..... | 138 |
| Burlington | 57 | 149 | 151 | ..... | 515 | 29 | 332 | 5 | ..... | ..... | 547 |
| Cardinal | 34 | 5 | 83 | 17 | 219 | 7 | 176 | ..... | ..... | ..... | 242 |
| Carleton Place | 103 | 47 | 147 | 43 | 422 | 82 | 232 | ..... | 1 | 50 | 429 |
| Chatham | 759 | 1,500 | 966 | ..... | 4,148 | ..... | 3,971 | ..... | 202 | 250 | 4,522 |
| Chesley | 47 | ..... | 93 | ..... | 329 | ..... | ..... | ..... | 31 | ..... | 334 |
| Chesterville | 55 | ..... | 96 | ..... | 222 | ..... | 202 | ..... | ..... | 18 | 250 |
| Clifford | 111 | 25 | 77 | 179 | 720 | 390 | ..... | 30 | ..... | 30 | 710 |
| Clinton | 84 | 50 | 115 | ..... | 318 | ..... | 264 | ..... | ..... | 15 | 279 |
| Creemore | 34 | 29 | 137 | 32 | 249 | 58 | 135 | ..... | ..... | ..... | 265 |
| Delhi | 37 | 25 | 83 | 17 | 448 | 12 | 313 | ..... | 12 | ..... | 373 |
| Dresden | 61 | ..... | 103 | ..... | 435 | ..... | 235 | ..... | ..... | ..... | 392 |
| Drumbo | 70 | ..... | 70 | ..... | 183 | ..... | 87 | ..... | ..... | ..... | 90 |
| Dundas | 183 | 943 | 318 | 18 | 1,758 | 8 | 1,522 | ..... | 27 | 25 | 1,865 |
| Durham | 25 | ..... | 63 | ..... | 180 | ..... | 130 | ..... | ..... | 15 | 171 |
| Dutton and Dunwich | 97 | 74 | 104 | ..... | 559 | ..... | 266 | ..... | ..... | 50 | 347 |
| Elmira | 64 | 27 | 123 | 39 | 375 | 66 | 173 | 11 | 10 | 10 | 330 |
| Elora and Salem | 155 | 45 | 232 | 143 | 1,073 | 127 | 555 | 7 | ..... | 25 | 997 |
| Essex | 49 | 75 | 110 | ..... | 251 | ..... | 189 | ..... | ..... | 20 | 269 |
| Exeter | 75 | 85 | 152 | ..... | 467 | ..... | 257 | ..... | 5 | ..... | 315 |
| Falkland | 25 | ..... | 32 | ..... | 58 | 26 | ..... | ..... | ..... | ..... | 27 |
| Fenelon Falls | 36 | 189 | 63 | ..... | 288 | 14 | 262 | ..... | ..... | ..... | 292 |
| Fergus | 73 | 65 | 173 | 45 | 372 | 150 | 72 | 35 | ..... | 15 | 350 |
| Forest | 75 | ..... | 125 | ..... | 356 | ..... | 216 | ..... | ..... | 10 | 264 |
| Fort William | 441 | ..... | 1,018 | 275 | 1,872 | 187 | 163 | ..... | ..... | 240 | 2,207 |
| Galt | 309 | 460 | 508 | 192 | 2,087 | 261 | 1,369 | 78 | 31 | 100 | 1,999 |
| Gananoque | 120 | ..... | 212 | 21 | 381 | 42 | 208 | 15 | 6 | 115 | 473 |
| Georgetown | 72 | ..... | 119 | ..... | 331 | ..... | 303 | 6 | ..... | ..... | 365 |
| Glencoe | 35 | ..... | 51 | ..... | 102 | ..... | 127 | ..... | ..... | ..... | 132 |
| Glenmorris | 68 | 17 | 68 | 13 | 180 | 46 | 50 | ..... | ..... | ..... | 110 |
| Goderich | 49 | ..... | 179 | ..... | 250 | ..... | 175 | ..... | ..... | ..... | 207 |
| Grimsby | 83 | 138 | 242 | 105 | 582 | 65 | 240 | ..... | 78 | ..... | 518 |
| Guelph | 555 | 500 | 1,252 | 2,181 | 4,418 | 206 | 2,634 | 154 | 220 | ..... | 4,417 |
| Guelph Tp | 75 | 50 | 80 | ..... | 229 | 57 | 94 | 11 | 3 | ..... | 287 |
| Haileybury | 64 | 464 | 220 | 75 | 928 | 222 | 400 | 39 | ..... | ..... | 880 |
| Hamilton | 445 | 231 | 796 | 254 | 1,911 | 302 | 504 | ..... | 25 | 150 | 1,884 |

ACTUAL RECEIPTS AND EXPENDITURES OF HORTICULTURAL SOCIETIES IN 1922—Continued

| Societies. | Legislative grant. | Municipal grants and donations. | Members' fees. | Gate receipts at exhibitions. | Total actual receipts. | For exhibitions. | For seeds, bulbs and plants and Civic Improvement. | For lawns and gardens. | Lectures and periodicals. | Officers' salaries. | Total actual expenditure. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ | $ | $ | $ | $ |
| Hanover | 151 | 26 | 322 | 15 | 873 | 46 | 587 | | | 20 | 864 |
| Harrow | 35 | 25 | 105 | | 304 | | 250 | | | | 326 |
| Hastings | 69 | 50 | 128 | | 374 | | 341 | | | | 388 |
| Hespeler | 86 | 50 | 216 | | 606 | 29 | 350 | | 91 | 25 | 617 |
| Highgate | 35 | | 51 | | 143 | | 180 | | 21 | | 222 |
| High Park | 203 | 10 | 623 | | 1,117 | 144 | 406 | | 60 | 62 | 1,094 |
| Hillsburg | 49 | 91 | 62 | 107 | 327 | 198 | 13 | | 4 | 15 | 326 |
| Ingersoll | 185 | 200 | 140 | | 1,298 | | 685 | | | 100 | 1,422 |
| Iroquois | 80 | 21 | 263 | | 379 | 39 | | 363 | | | 471 |
| Iroquois Falls | 112 | 334 | 99 | 10 | 692 | 334 | 157 | | 15 | 50 | 689 |
| Keewatin | 75 | 19 | 101 | 40 | 439 | 153 | | 25 | | | 349 |
| Kemptville | 120 | 64 | 196 | | 499 | 22 | 340 | 20 | | | 468 |
| Kingston | 79 | | 243 | 29 | 393 | 190 | 13 | 55 | | 50 | 435 |
| Kingsville | 212 | 249 | 249 | | 1,424 | 59 | 214 | | | 50 | 1,358 |
| Kitchener | 247 | 485 | 595 | 166 | 1,594 | 361 | 642 | 64 | | 100 | 1,627 |
| Leamington | 165 | 75 | 336 | | 1,092 | | 834 | | 18 | 25 | 1,029 |
| Lindsay | 282 | 1,963 | 340 | | 2,641 | 5 | 2,075 | 30 | 22 | 25 | 2,733 |
| Listowel | 85 | Return | s Incomplete. | | | | | | | | |
| London | 566 | | 2,209 | | 3,280 | 60 | 840 | | 897 | 406 | 3,178 |
| Markdale | 58 | | 58 | | 131 | | 67 | | | | 72 |
| Markham | 60 | 81 | 135 | 100 | 466 | 47 | 82 | 35 | 72 | | 453 |
| Matilda Tp. | 32 | 20 | 177 | | 343 | 48 | 305 | | | | 397 |
| Meaford | Return | s Incomplete. | | | | | | | | | |
| Midland | 46 | 4 | 147 | | 199 | | 154 | | | 5 | 211 |
| Milton | 49 | | 161 | 15 | 390 | 31 | 265 | 46 | 3 | 15 | 419 |
| Mimico | 150 | 235 | 797 | 89 | 1,330 | 203 | 390 | | 51 | 100 | 1,330 |
| Mitchell | 45 | | 214 | | 342 | | 260 | | | 25 | 351 |
| Mount Dennis | 19 | 33 | 172 | | 490 | | 477 | | | | 559 |
| Morrisburg | 170 | 81 | 392 | | 1,048 | 141 | 747 | 15 | 15 | 20 | 1,091 |
| Napanee | 35 | | 72 | | 126 | 26 | 133 | | | 25 | 192 |
| Newcastle | 69 | 132 | 115 | | 403 | 111 | 197 | | | 25 | 401 |
| New Hamburg | 24 | 25 | 71 | 23 | 152 | 50 | 126 | | 1 | | 214 |
| New Toronto | 118 | 175 | 180 | | 785 | | 503 | | | | 791 |
| Niagara Falls | 204 | 491 | 536 | | 1,231 | 134 | 420 | 170 | 292 | | 1,287 |
| North Bay | 56 | | 251 | | 320 | 28 | 184 | 25 | | | 342 |
| North Blenheim | 47 | | 91 | 70 | 225 | 94 | 108 | 10 | 21 | | 312 |
| Norwich | | 50 | 85 | | 255 | | 295 | | 17 | | 312 |
| Norwood | 75 | 50 | 92 | | 391 | | 361 | | | | 370 |
| Orangeville | 39 | | 56 | | 180 | | 112 | | | 25 | 200 |
| Orillia | 96 | 150 | 347 | | 781 | | 627 | | 27 | | 785 |
| Orono | 44 | 20 | 139 | | 198 | 172 | 22 | | 7 | | 243 |
| Oshawa | Return | s Incomplete. | | | | | | | | | |
| Ottawa | 637 | 787 | 1,408 | | 3,031 | 660 | 1,343 | | 35 | 250 | 3,053 |
| Owen Sound | 269 | 106 | 522 | | 2,206 | 261 | 1,562 | 105 | 5 | | 2,173 |
| Paisley | 18 | | 87 | | 143 | | 134 | | | | 145 |
| Palmerston | 72 | 25 | 116 | 63 | 597 | 152 | 326 | | 3 | | 625 |
| Paris | 191 | | 286 | 11 | 746 | 77 | 488 | | | | 625 |
| Paris Road | 12 | | 40 | | 135 | | 124 | | | | 133 |
| Perth | 113 | 38 | 260 | | 548 | | 420 | | 17 | 30 | 568 |
| Peterborough | 137 | 57 | 502 | | 707 | | 391 | 39 | | | 736 |
| Petrolia | 81 | | 196 | | 485 | | 281 | | 8 | | 324 |
| Pleasant Ridge District | 31 | | 31 | | 89 | | 59 | | | 10 | 81 |
| Port Credit | 75 | 41 | 161 | 12 | 339 | 141 | 10 | | 10 | | 316 |
| Port Dover | 48 | 15 | 123 | 24 | 242 | 54 | 148 | | 60 | 50 | 315 |
| Port Elgin | 75 | 10 | 102 | | 188 | | 130 | 20 | | 10 | 166 |
| Port Hope | Return | s Incomplete. | | | | | | | | | |
| Prescott | 61 | | 130 | | 331 | | 311 | | | | 321 |

ACTUAL RECEIPTS AND EXPENDITURES OF HORTICULTURAL SOCIETIES IN 1922—Continued

| Societies. | Legislative grant. | Municipal grants and donations. | Members' fees. | Gate receipts at exhibitions. | Total actual receipts. | For exhibitions. | For seeds, bulbs and plants and Civic Improvement. | For lawns and gardens. | Lectures and periodicals. | Officers' salaries. | Total actual expenditure. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ | $ | $ | $ | $ |
| Preston | 110 | 258 | 274 | 48 | 1,012 | 128 | 392 | | 32 | 50 | 782 |
| Puslinch Tp. | 75 | 3 | 76 | | 165 | 6 | 74 | | 7 | 10 | 112 |
| Richmond Hill | 35 | | 90 | | 197 | | 144 | | 10 | | 245 |
| Ridgetown | 98 | 16 | 216 | | 823 | | 734 | | | | 783 |
| Riverdale | 93 | 48 | 158 | 46 | 506 | 242 | 33 | | 10 | | 566 |
| Rockwood | 49 | | 97 | | 428 | 75 | 309 | | | | 444 |
| Rodney | 68 | 17 | 59 | | 302 | | 272 | | | | 283 |
| Russell | 20 | | 39 | | 61 | | 54 | | | | 79 |
| St. Catharines | 723 | 588 | 1,105 | 202 | 2,908 | 470 | 703 | | 4 | 375 | 2,849 |
| St. George | 56 | 22 | 130 | 10 | 334 | 34 | 231 | | 2 | | 308 |
| St. Mary's | 83 | 1 | 104 | | 217 | 24 | 57 | | | | 90 |
| St. Thomas | 800 | 2,388 | 1,861 | | 15,856 | | 8,799 | | | 2,700 | 15,671 |
| Sarnia | 217 | | 397 | | 2,322 | | 946 | | | | 1,452 |
| Seaforth | 128 | 50 | 190 | | 640 | | 487 | | 6 | 60 | 647 |
| Simcoe | 75 | | 101 | | 178 | | 119 | | | | 131 |
| Smith's Falls | 72 | 300 | 204 | | 576 | 83 | 504 | 15 | 8 | | 666 |
| Smithville | 29 | | 76 | | 105 | | 36 | 12 | | | 114 |
| Southampton | 72 | 25 | 138 | | 309 | | 194 | 10 | | | 263 |
| South Norwich Tp. | 53 | 100 | 105 | | 291 | | 196 | | 13 | | 240 |
| Stirling | 39 | 25 | 109 | | 238 | | 175 | | 43 | | 237 |
| Stratford | 389 | 300 | 1,562 | | 2,419 | 183 | 1,869 | 15 | 130 | 100 | 2,521 |
| Strathroy | 116 | | 318 | | 720 | 47 | 762 | | 9 | 25 | 917 |
| Sturgeon Falls | 75 | | 79 | | 205 | | 118 | | | | 144 |
| Sudbury | 75 | 257 | 132 | 201 | 726 | 127 | 108 | | 13 | | 599 |
| Teeswater and Culross | 75 | | 86 | | 209 | | 137 | | | | 145 |
| Thessalon | 60 | 100 | 59 | | 219 | | 124 | | | | 125 |
| Thornhill | 42 | 94 | 35 | | 277 | 114 | | 16 | 5 | | 246 |
| Tillsonburg | 121 | | 131 | | 532 | 36 | 447 | | | | 484 |
| Toronto | 265 | 70 | 647 | 50 | 2,643 | 530 | 47 | | 27 | 30 | 2,586 |
| Tottenham | 55 | | 55 | | 141 | | 63 | | | | 66 |
| Trenton | 302 | 85 | 345 | | 879 | 455 | | | | | 776 |
| Vernon | 60 | 2 | 67 | | 180 | 26 | 67 | 9 | | | 149 |
| Wales | 29 | | 40 | | 69 | 23 | | | | | 43 |
| Walkerton | 91 | 25 | 262 | 47 | 507 | | 347 | 15 | | | 470 |
| Walkerville | 110 | | 288 | | 473 | | 363 | | | | 473 |
| Wallaceburg | 185 | 574 | 342 | | 1,600 | | 1,390 | | 27 | | 1,563 |
| Walton | 61 | | 119 | | 276 | | 226 | | | | 243 |
| Waterloo | 55 | 101 | 613 | 68 | 1,146 | 99 | 637 | 11 | 16 | 100 | 992 |
| Watford | 56 | 75 | 189 | | 535 | 5 | 523 | | 10 | | 568 |
| Welland | 75 | | 277 | | 510 | 6 | 277 | 38 | 26 | 100 | 613 |
| Westboro | 122 | 145 | 310 | | 696 | 146 | 279 | 14 | | 25 | 691 |
| West Lorne | 33 | 73 | 74 | | 200 | | 176 | | | | 176 |
| Weston | 632 | | 1,425 | 68 | 2,538 | 166 | 1,310 | | 121 | | 2,578 |
| Wheatley | 111 | 25 | 98 | | 500 | | 439 | | | 10 | 472 |
| Whitby | 44 | | 146 | | 244 | 16 | 155 | | 42 | | 256 |
| Wiarton | 25 | | 113 | 31 | 174 | 14 | 144 | | | | 195 |
| Winchester | 75 | 85 | 175 | | 390 | | 286 | 3 | | 25 | 433 |
| Windsor | 197 | 300 | 1,154 | | 721 | | 1,561 | | 86 | | 1,782 |
| Wingham | 75 | 64 | 113 | | 921 | | 545 | 30 | 83 | | 735 |
| Woodstock | 205 | 461 | 382 | 74 | 1,238 | 129 | 802 | | 45 | 125 | 1,239 |
| Wyoming | 75 | | 86 | | 226 | | 191 | | 10 | | 224 |
| | 19,246 | 19,172 | 42,535 | 3,640 | 124,480 | 10,322 | 70,046 | 1,620 | 3,533 | 6,943 | 123,424 |

# Ontario Department of Agriculture

## FIFTY-FOURTH ANNUAL REPORT

OF THE

# Fruit Growers' Association

OF

# ONTARIO

# 1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO
Printed by CLARKSON W. JAMES, Printer to the King's Most Excellent Majesty
1923

PRODUCED BY
The United Press
LIMITED
TORONTO
CANADA

*To His Honour* HENRY COCKSHUTT,

*Lieutenant-Governor of the Province of Ontario.*

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the Report of the Fruit Growers' Association of Ontario for the year 1922.

Respectfully yours,

MANNING W. DOHERTY,
*Minister of Agriculture.*

Toronto, 1923.

# CONTENTS


Officers and Committees for 1923 ..... 5

Treasurer's Report ..... 5

Annual Meeting:

President's Address: W. J. Bragg ..... 7

Report of Historical Committee: A. W. Peart, Burlington ..... 8

Report of Committee on New Fruits: W. T. Macoun, Ottawa ..... 9

The Canadian Horticultural Council, Its Organization and Aims: L. F. Burrows, Ottawa ..... 11

The Imperial Fruit Show: P. J. Carey, Toronto ..... 13

Apple Scab: Prof. W. H. Whetzel, Ithaca, N.Y. ..... 16

The Control of the Codling Moth: Prof. L. Caesar, Guelph. ..... 22

Casein Spreaders: Wm. A. Ross, Entomologist, Vineland Station ..... 25

Raspberry Diseases: J. F. Hockey, Dominion Plant Laboratory, St. Catharines ..... 26

Amendment to Constitution ..... 30

The Fertilizers Act in Relation to Fruit Growers: G. S. Peart, Chief Fertilizer Division, Ottawa ..... 30

The Grading and Packing of Our Fruits: R. W. Rees, Rochester, N.Y. ..... 35

Transportation Rates: Geo. E. McIntosh, Ottawa ..... 39

Suggestions for Discussion of Freight Rates on Fruits and Vegetables: Major R. L. Wheeler, Ottawa ..... 42

Report of Nominating Committee ..... 46

Certification of Nursery Stock: E. F. Palmer, Vineland Station ..... 46

Government Cold Storage, Brighton: A. Fulton, Brighton ..... 51

Report of the Resolutions Committee ..... 53

The Relation of the Canned and Dried Fruit Industry to the Fruit and Vegetable Grower: C. S. McGilvray, Ottawa ..... 54

Varieties of Fruit for Planting:

The Dealer's Viewpoint: Chas. Dawson, Toronto ..... 57

The Nurseryman's Viewpoint: Major Armand Smith, Winona ..... 60

The Grower's Viewpoint: Geo. Wilson, St. Catharines ..... 62

Report of Transportation Committee ..... 64

## OFFICERS FOR 1923.

*President*.....Paul Fisher, Burlington.
*Vice-President*.....Howard Leavens, Bloomfield.
*Secretary-Treasurer*.....P. W. Hodgetts, Toronto.
*Assistant Secretary*.....A. Fulton, Toronto.
*Executive Committee*.....Officers, together with W. Jas. Schuyler, Simcoe, and Dr. Moore, Thornbury.
*Auditor*.....D. F. Cashman, Toronto.

### Directors.

Div. 1. Justus Jones, Prescott, Ont.
2. H. Leavens, Bloomfield.
H. Sirett, Brighton.
A. A. Colwill, Newcastle.
3. W. M. Fletcher, Clarkson.
4. Paul Fisher, Burlington.
5. J. B. Fairbairn, Beamsville.
Geo. E. Brown, Fonthill.
Hamilton Fleming, Grimsby.
6. W. Jas. Schuyler, Simcoe.
8. W. H. Mundy, R.R. 6, London.
9. H. S. Howell, St. George.
10. Dr. Moore, Thornbury.
O.A.C., Prof. A. H. MacLennan, Guelph.
H.E.S., E. F. Palmer, Vineland Station.
C.E.F., W. T. Macoun, Ottawa.

### Representatives to Fair Boards and Conventions.

*Canadian National:* W. F. W. Fisher, Burlington.
*London:* W. England, R.R. 5, London; A. J. Cody, R.R. 7, London.
*Ottawa:* W. T. Macoun, Ottawa.

### Committees.

*Horticultural Publishing Company:* Hamilton Fleming, Grimsby.

*New Fruits:* W. T. Macoun, E. F. Palmer, A. H. MacLennan.

*Historical:* A. W. Peart, W. T. Macoun.

*Transportation:* C. W. Baxter, Grimsby; W. M. Fletcher, Clarkson; W. J. Bragg, Bowmanville; W. H. Bunting, St. Catharines; Jas. E. Johnson, Simcoe; T. Foster, Burlington.

*Tariff:* Jas. E. Johnson, Simcoe; W. A. Fraser, Trenton; W. F. W. Fisher, Burlington.

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## TREASURER'S REPORT, 1922.

### Receipts.

| | |
|---|---|
| Balance on hand, Dec. 31, 1921 | $2,222 90 |
| Membership Fees | 112 50 |
| Imperial Fruit Show | 921 94 |
| Interest | 37 93 |
| Grant | 1,700 00 |
| | $4,995 27 |

### Expenditures.

| | |
|---|---|
| Annual Meeting | $313 35 |
| Committee Meetings | 109 13 |
| Printing | 20 25 |
| Periodicals, Hort. Pub. Co | 115 20 |
| Imperial Fruit Show | 1,839 87 |
| Miscellaneous | 242 55 |
| *Balance on hand* | 2,354 92 |
| | $4,995 27 |

| | | |
|---|---|---|
| **ANNUAL MEETING:** | | |
| Advertising— | | |
| Farmer's Advocate | $21 00 | |
| McLean Publishing Co | 33 00 | |
| Farmer's Sun | 35 00 | |
| Canadian Countryman | 52 50 | |
| Rent of Hall, Prince George Hotel | 50 00 | |
| Reporting Convention, M. E. Coo | 60 00 | |
| Travelling Expenses— | | |
| P. Hynd | 9 20 | |
| A. J. Cody | 21 60 | |
| David Allan | 25 25 | |
| P. W. Hodgetts | 5 80 | |
| | | $313 35 |
| **COMMITTEES:** | | |
| Travelling Expenses— | | |
| A. A. Craise | $6 00 | |
| H. Sirett | 7 45 | |
| A. W. Peart | 3 00 | |
| W. H. Bunting | 11 08 | |
| F. C. Donald | 12 20 | |
| L. B. Reynolds | 5 50 | |
| W. H. Kneale | 9 70 | |
| M. Meek | 7 65 | |
| T. J. Mahoney | 45 55 | |
| | | 109 13 |
| **PRINTING:** | | |
| College Press, Programmes | | 20 25 |
| **PERIODICALS:** | | |
| Canadian Horticulturist, Subscriptions | | 115 20 |
| **IMPERIAL FRUIT SHOW:** | | |
| Sale of Fruit— | | |
| H. C. Breckon | $240 99 | |
| W. L. Hamilton | 130 74 | |
| Harry Ryrie | 73 18 | |
| W. F. W. Fisher & Sons | 72 96 | |
| Smith Bros. (Freeman) | 200 48 | |
| Smith Bros. (Oakville) | 53 70 | |
| W. N. Langell | 48 94 | |
| Woodland Orchards | 83 15 | |
| J. F. Osborne | 34 87 | |
| P. W. Hodgetts | 21 33 | |
| C. W. Challand | 41 63 | |
| Fred. Schuyler | 25 11 | |
| W. H. Gibson | 31 11 | |
| Leslie Smith | 18 83 | |
| J. C. Smith | 37 67 | |
| J. C. Harris | 18 00 | |
| G. W. Breckon | 9 00 | |
| Chas. Jarvis | 8 93 | |
| | | 1,150 62 |
| Entry Fees, Geo. E. McIntosh | | 85 50 |
| Collecting and Packing Fruit— | | |
| H. N. Webster | $86 15 | |
| W. L. Hamilton | 334 86 | |
| P. W. Hodgetts | 170 19 | |
| | | 591 20 |
| Baskets, Niagara Peninsula Growers, Limited | | 12 55 |
| | | $1,839 87 |
| **MISCELLANEOUS:** | | |
| Office Help | $212 00 | |
| Audit | 10 00 | |
| Treasurer's Bond | 10 00 | |
| Fees | 10 25 | |
| Exchange | 30 | |
| | | $242 55 |

# Fruit Growers' Association of Ontario

## ANNUAL CONVENTION

The Annual Convention of The Fruit Growers' Association of Ontario was held in the Prince George Hotel, Toronto, February 20th and 21st, 1923. The President, W. J. Bragg, M.P.P., Bowmanville, in the Chair.

### PRESIDENT'S ADDRESS.

W. G. Bragg, M.P.P., Bowmanville.

It is with a great deal of pleasure that we welcome you to our Sixty-Third Annual Meeting of the Ontario Fruit Growers' Association. We meet to-day under peculiar circumstances, having passed through a very strenuous season in which we faced conditions never before forced upon us. Questions regarding this will come up at our meeting to-day. In fact, the executive, in preparing the programme for this convention was careful in putting on our programme speakers who were prepared to deal with the different situations as we saw them during the past year. I am sure this will meet with your approval and that your interest will be held throughout the convention.

We are glad to see so many of our old friends here to-day and to note the number of new faces.

The apple season of 1922 was very peculiar. We had an excessively heavy crop of tree fruits, and when the apples were put on the market they came in competition with the more tender fruits from the Niagara District, such as peaches, plums and pears, which militated against the sale of our apples. I made a number of visits to the Toronto markets, and I found on different occasions the dealers were completely overwhelmed with the supply of fruits from the different parts of the Province. It was absolutely impossible for them to make satisfactory sales of any of these fruits because it was a matter of putting on the market a product which the people would not buy. However, we trust throughout the Province generally conditions have not been too bad and that the fruit growers have made a reasonable profit out of their enterprise.

It is a matter of gratification to the fruit growers of Ontario, and to this Association particularly, that Ontario fruit stood so high at the Imperial Show in London, England. We have every reason to be proud of the splendid success we made. Mr. Carey, who acted as judge at the Imperial Show, will make the presentation of medals which our fruit growers received at that show. In looking over the list of varieties, I find that the Ontario Fruit Growers' Association came out first, and sometimes first and second, as winners of the prizes in the Overseas Section at the Imperial Show.

We also made a very good record and showing at the Royal Winter Fair at Toronto, a record of which we also may be proud.

During the past season in one class of fruit we were not successful in production, and that is raspberries. There seemed to be a disease which struck the raspberry cane in the last season, so we have on our programme a speaker who will deal with that subject alone—Mr. J. F. Hockey, of the Dominion Plant Laboratory, St. Catharines. Last season was so disastrous that some growers have gone out of raspberries entirely.

## REPORT OF HISTORICAL COMMITTEE, 1922.

A. W. Peart, Burlington.

The winter of 1921-1922 was mild with very little snow. Two severe ice storms in the central portion of the Province did considerable damage to fruit trees especially those of the tender varieties, breaking down branches, and in some cases entirely stripping the trees. It was hoped that the coat of ice would smother the San Jose Scale, but many on the more sheltered parts of branches escaped and were strongly in evidence during the picking season. Black knot is still a scourge in many plum orchards, and will soon destroy the trees if not cut out.

There was plenty of moisture during the growing season and fruits reached a good size. The fruit crop generally was very good, and of excellent quality; cherries, peaches and plums were very heavy and prices sagged as the season went on, until the margin of profit was wiped out and hundreds of bushels of fruit were left on the trees. Pears too were good, but prices very low. Grapes were a heavy crop and prices generally satisfactory. The apple crop was fair. Typical orchard sales in the Province for standard varieties, fall and winter, ran from 60 to 75 cents a bushel on the trees, the buyer doing the picking. Orchards well-cared for gave fine apples of extra colour.

The Province is to be congratulated on the success of its fruit exhibits at the Imperial Show, London, England, and the Royal Show, Toronto. At the former our growers secured eleven first prizes, nine second and one third, as well as a cash award of £74. At the latter, they won first and third in the 100 box lots, and first in single, 10 and 20 box lots of Jonathans. We more than held our own in McIntosh and Spy against considerable competition.

It might not be out of place here to give a word of commendation to the various exhibits at the Royal Show: fruits, vegetables, flowers and plants, fish, grains, foxes, poultry, sheep, pigs, cattle and horses—all were there in abundance, and of a quality which was a revelation as well as a matter of pride to Canadians.

No money has been made on the land these last two years. Economic conditions bear more hardly on the fruit grower and farmer than they have for probably fifty years. He is being ground between two powerful forces which he appears unable to escape. On the one side are high overhead expenses, wages, taxes, high cost of implements, machinery, etc., general slackness and lack of thorough work. On the other side, there is the low price of farm products, running from zero in some fruits and vegetables to a fair price only for some lines. In other words, the cost of production has swallowed the profit, and the growers have had to use their savings, sell off some of their capital or get advances from the banks. Another factor in the depression is due to the extravagance everywhere, brought about by the flush times of the war. We will have to overhaul our economic habits all along the line or go broke. Fifteen or twenty years ago the workers on the land bought closely and spent their money carefully and with judgment. The chief question in their mind was "Is this article necessary?" When they had products to sell they sought diligently for the best market. Farm wages are out of all proportion to the price of farm products. Municipal taxes are increasing about 10% per year, and owing to heavy municipal and governmental undertakings will continue to increase. The price of agricultural implements and machinery is 100 per cent. higher than before the war. All the above and others as well are contributing causes to the hard times on the farm. The situation is one of the general economic effects of the World War. Can we do

anything about it? It is time to call a halt both in private and public business, and to scrutinize carefully our position. We must revise our spending habits and insist on rigid economy on our farms and in our municipal, Provincial and Federal Governments, and we must stamp out all frenzied finance schemes and try to bring about an era in which common sense will rule. If we have the will to do these things, a brighter day will dawn for the workers of the soil.

Mr. Macoun: I would like to add a word or two in addition to this report in regard to the death of some very prominent horticulturists in America during the past year. Most of these men lived on the other side of the line, but they were international in that their work was of practically as much value to us as to the United States. I refer first of all to the death of Prof. S. A. Beach, of Iowa College Experimental Station. He was one of the outstanding figures in American horticulture; he was an old friend of this Association, and has addressed it in times past. He died last summer. Then there was Prof. Whitten, Professor of Horticulture of the Agricultural College of California, who died during the past year. There was also Dr. Tracy, of the Department of Agriculture, Washington. All of those interested in the growing of vegetables will know about Dr. Tracy who did more than any other man to systematize the nomenclature of vegetables, and his death is worthy of record by our Association. Then there was the death of Harold Powell, President of the California Fruit Exchange. Mr. Powell was able, during the time he was head of that Exchange, to bring it to such a shape that it was modelled all over the world.

In Canada, we have not lost many prominent horticulturists during the last year, but I should like to refer to the death of Mr. A. P. Stevenson, of Morden, Manitoba. Mr. Stevenson who died early in this winter, did more to prove that apples could be grown in Manitoba than any other man. He had an orchard in Southern Manitoba which I visited nearly every year, where apples were growing just as in the Province of Ontario. It was not a very large orchard, but he would have from 200 to 300 barrels of apples each year, of just as fine fruit as can be found anywhere. His enthusiasm during the many years he worked in the West has inspired many to test out fruits there, and it has done a great deal for the advancement of horticulture on the prairies. I think, Mr. Chairman, this should be added to the report of the Historical Committee.

---

## REPORT OF COMMITTEE ON NEW FRUITS.

Prof. W. T. Macoun, Ottawa.

I had hoped that our committee on New Fruits would be able to get together before this meeting and have drafted a report, but in a few words I shall be able to tell you what we should have presented in our joint report.

There are three main sources for the testing of fruit in the Province of Ontario: The Vineland Experimental Station, Vineland; the Agricultural College, Guelph, and the Dominion Experimental Farm, Ottawa. In addition to these, there are a few fruit testing stations. At these main testing stations, it is our duty to test out all the new things that appear on the market. In addition to that, most of us are trying to originate new varieties of fruits which will be better than those we have to-day. I think you will all agree with me that there is not now a single perfect fruit; each one of them has one or more weak points as far as commerce is concerned.

During the past season a few varieties of apples have come prominently to the attention of Ontario Fruit Growers. One of these is the Golden Delicious

which is being highly advertised by the firm of Stark Brothers, the introducers of the Delicious apple. I have had an opportunity of testing the Golden Delicious apple, and I find it of very good quality; it is an apple somewhat of the type of Grimes Golden, but a little juicier. Whether or not it will be satisfactory in the Province of Ontario we do not know, but it is being tested in the different parts, and in a few years we will know more about it.

Another apple which has received a good deal of attention in the press recently is the Seedless Fameuse or Snow Apple. It is seedless and coreless. This apple was brought to the meeting of the Quebec Pomological Society at Macdonald College last December by Mr. A. W. Buzzell, of Abbotsford, Quebec. I had an opportunity of seeing and tasting the fruit. Mr. Buzzell when he was packing his fruit from a young orchard, early this winter, noticed there were quite a number of specimens of Fameuse which were a little different in shape from the ordinary Fameuse. They were a little longer, and he cut one of those and found it had neither a core nor seeds, so he cut some more and every one of them was just the same. The only indication of a core is a very small line running from one end to the other of the apple; the apple is practically solid flesh. The remarkable thing about this is that Mr. Buzzell does not know where that tree is in his orchard. This is the first year these trees have come into bearing, and nobody knows whether these will be reproduced next year or not. I fancy Mr. Buzzell will find the tree this year or next year, and I fancy also he will find that the apple will be seedless just as he found it this year.

Mr. Buzzell, if he is a careful man, should make a lot of money out of that apple, whether it is good or bad. We hope it will be good. It certainly tasted and looked like the Fameuse.

This brings to mind the new variety of strawberry called the Rockhill, that has been purchased for $50,000 from Mr. Rockhill, of Iowa. Mr. Rockhill had 350,000 plants of these strawberries before he sold it, and he was wise in that. I have been told this Rockhill is the best everbearing strawberry that Mr. Rockhill has introduced. He introduced the Progressive and America, two of the best we have, and I understand Mr. Rockhill made practically nothing out of these two, because he was foolish enough to let those go out before he had increased his stock sufficiently to be able to sell at a large price.

In regard to the breeding of new varieties of apples, we have been engaged in that work at Ottawa for about 25 years, and we think we have made very good progress, but it will take quite a few more years before we are satisfied that it is time to quit. To give you an idea of the progress we have made in developing winter apples: 25 years ago we had only five varieties of winter apples which we considered hardy at Ottawa. Now we have nearly 300 varieties there that have gone through that very severe winter of 1917-18, and we are testing to find out which of these varieties will stand up and be the most useful in the colder parts of Canada. Then we have introduced a few sorts such as the Melba apple, a summer seedling of the McIntosh, which we believe is going to be a leading commercial variety before many years are over. Its season is just before the Duchess; it is a red apple, tastes a good deal like the McIntosh and is very attractive in appearance.

Most of those who live in the Niagara Peninsula are well acquainted with the field work they are doing at the Vineland Station in the breeding of tender fruit, and I think before many years are over you will see some fine things sent out from there which will take the place of the commercial varieties already on the market.

## THE CANADIAN HORTICULTURAL COUNCIL: ITS ORGANIZATION AND AIMS.

Leslie Burrows, Ottawa.

It has been the practice of the Fruit Branch of the Department of Agriculture from time to time to call together the fruit growers of the Dominion to discuss questions relative to the fruit industry and make recommendations which have resulted in the amendments to the Fruit Marks Act. At the Conference in 1912, a resolution was adopted recommending that a National Fruit Growers' Association be formed to coordinate the work of the various fruit organizations in the Provinces throughout the Dominion. An organization was formed, and a directorate appointed, but not more than one or two meetings were held. It was probably due to the war commencing in 1914 that the further organization of the National Fruit Growers' Association was dropped. Immediately following the war, the question was again taken up, and at the last Dominion Fruit Growers' Conference held in Ottawa in February, the policy of that conference was broadened so as to include representatives not only of fruit growers, but of the package manufacturers, jam manufacturers, canners and the nurserymen. The question of the formation of a council was again brought forth and it was decided to recommend the formation of a Canadian Horticultural Council to include representatives from all the horticultural and allied interests rather than limited strictly to the fruit growers. Following that meeting a provisional directorate was appointed and representatives were nominated from the various fruit growers' associations, vegetable growers' associations, package manufacturers, jam manufacturers, canners, nurserymen, amateur horticulturists and florists and gardeners in proportion approximately relative to the size of the industry, but bearing in mind the necessity of a majority of growers being on the council at all times. A provisional constitution and by-laws were drawn up and provisionally adopted. The objects of the council set forth in the constitution are before you this morning, as follows:

"To advance all matters tending towards the improvement of the horticultural and allied industries in Canada including plant origination and registration, production, grading, packing, transportation, storage and marketing.

"By bringing about a closer co-operation between those engaged in the horticultural and allied industries in Canada and a fuller understanding of their problems. By initiating, fostering and assisting in obtaining such legislation and regulations as will be beneficial to the horticultural and allied industries.

"By emphasizing through inter-provincial co-operation the importance of the horticultural and allied industries and to obtain for them the position they deserve as an important and progressive branch of agriculture. By encouraging the development of horticultural education, the holding of horticultural displays, the distribution of literature and systematic advertising informing the general public as to the value and general use of horticultural products.

"By encouraging the adoption of uniform standards of grading, packages and packing, and assisting in developing home and foreign markets.

"By providing means for the registration of horticultural plants, shrubs or trees and recognition for varieties of outstanding merit.

"By co-operating with the railway, express and steamship companies in securing the best conditions for transportation and a just equalization of charges therefor.

"By co-operating with any agency working in the national interests for the improvement of marketing methods or for the more equitable distribution of horticultural products.

"By carrying on any undertaking which may seem to the council capable of being carried on in furtherance of these objects."

The membership clause and the finance clause were the two most difficult to determine. There is always a considerable amount of discussion as to who and who should not have representation, and the number of representatives which a certain association or group of associations should have. After very careful consideration on the part of the Provisional Directorate, which consisted of

Col. Roberts as President, F. W. Bishop, President of the United Fruit Companies, Nova Scotia, 1st vice-president; R. R. Scott, Scott Fruit Company, Winnipeg, 2nd vice-president; directors: W. E. Groves, Canadian Florists and Gardeners' Association; W. Stewart, president, Ontario Vegetable Growers' Association, and the late Mr. Wagstaff, of Wagstaffs, Limited, Hamilton, it was decided to recommend that the membership should consist approximately as follows:

> 'The Canadian Horticultural Council shall consist of eighteen representatives of the horticultural and allied industries in Canada, appointed, where possible, by the associations of the industries concerned. Five of these shall be representatives of the Fruit Growers (one each from British Columbia and the Prairie Provinces, combined; Ontario, Quebec; New Brunswick and Prince Edward Island, combined, and from Nova Scotia). Four of the Vegetable Growers (one each from British Columbia and the Prairie Provinces, combined; Ontario; Quebec; and New Brunswick, Prince Edward Island and Nova Scotia, combined). Two of the wholesale fruit and vegetable dealers (one from Western Canada and one from Eastern Canada). One of the package manufacturers; one of the florists and gardeners; one of the jam manufacturers and one of the canners; one of the nurserymen; one of the amateur horticulturists and one from the seedsmen."

The next most difficult question was the arrangement of the finances. In allotting the finances amongst the different associations, the first idea was to allot according to size. It was found in preparing the budget in order to maintain a permanent office and administrative staff that the annual expense of the council would approximately be $10,000, and on this basis a division was made between the various associations interested. At the same meeting, various standing committees were appointed, one on Transportation, of which Mr. G. E. McIntosh was chairman; one on Legislation, of which Mr. Baxter was chairman; one on Plant Registration, of which Mr. Macoun was chairman, and a Publicity Committee, of which Mr. E. B. Luke, Montreal, was chairman. The various committees have met throughout the year and have taken up a considerable amount of work. The Plant Registration Committee were in a position after a number of meetings to recommend a system for the formation of plant registration bureau providing for a means, practically, of plant patenting. The meeting of the Council was called and a report of the committee presented and adopted. It was decided that instead of requesting that legislation be obtained through the Dominion Government as a protective means, to proceed on a voluntary basis for at least two years, until such time as it was known the exact nature of the legislation required. The matter was taken up with the Honourable Minister of Agriculture who thoroughly endorsed the scheme, and offered financial assistance in order that it should be carried out. Such financial assistance has so altered the financial requirements of the Council that the clause referring to finances was immediately amended reducing the required amount from the various associations very considerably; in fact the only finances required now are those to cover the annual meeting and the committee meetings which it is proposed to hold throughout the year. The remainder of the finances we expect to receive from the Dominion Government for the purpose of plant registration which will carry the administrative staff.

Other committees have taken up a number of questions with the various departments of the Government, and so far have been quite successful. We have obtained, through our Publicity Committee, a large amount of publicity free, and because it was free, naturally, it was very limited. The Transportation Committee, through Mr. McIntosh, has taken up a number of questions.

The Council has devoted the majority of its time during the past year to placing before the associations which we expect to form, its membership, its objects and work, and this is the final meeting at which the organization must

be taken up. Each and every other association has held their annual meeting, and have unanimously endorsed the Council, and have agreed to support it by naming their representatives and paying their allotted dues.

As only one representative has been allotted to the fruit interests of Ontario, and as the finances are proposed to be contributed by the larger co-operative associations, particularly the Niagara Peninsula Growers and Ontario Fruit Growers, it is proposed that such delegates that you may care to appoint might, with an equal number of members from the Niagara Peninsula Growers, together nominate the man to represent the fruit interests of Ontario.

It is quite probable that a number of the provisions of the constitution as it stands at present are not acceptable to you. That may be expected, when we think of the fact that the Fruit Marks Act as it stands to-day contains only one small clause of the original Fruit Act, but the Fruit Act that we are putting through, which is before the House at the present time, shows progress. We hope that the constitution of the Council may be amended from time to time to show the same progress as has been made with the Fruit Marks Act.

The Council is entirely a council of representatives of the horticultural and allied interests; there is no provision for a member of the Government or a Government appointment on the Council, although it has the support and sympathy of the Dominion Government. The council, is therefore, capable of being made entirely what the interests care to make of it, and what they care to use it for.

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## THE IMPERIAL FRUIT SHOW.

P. J. Carey, Toronto.

I would like to draw a comparison between the two shows that have been held in London. It is generally known that I had the honour of taking over the Dominion display in 1921, and last year, 1922, of being Canadian judge, and I feel very grateful to the fruit growers of Canada for receiving that honour. I may say that I did the best I could. This last year, I am not too modest to say that I got what I went after.

At the 1921 Show, the Dominion had an exhibit, and we thought it was a fairly good one. British Columbia had a good display; Ontario, Nova Scotia, New Brunswick had good displays. These were non-competitive. In the 1922 show these were all missing with the exception of Ontario. Ontario had a non-competitive display as well as a competitive display. In a comparison between the two years, the last show would suffer very severely. Visitors attending an exhibition want something spectacular; they are not satisfied with anything that is ordinary, and last year's show fell down in that respect. In future I would be very much in favour of displays, non-competitive, supported by the different Governments. The London *Daily Mail* has suffered a heavy loss through the two shows, and they have given up the game entirely. It is said they have lost by the small attendance £8,000 in the two years, and they have withdrawn.

Next year's show will be held in Manchester. This should be a great success. Manchester is situated in such a way that it is claimed there are 10,000,000 people within thirty miles of it. It is about thirty miles from the sea, and is reached by ship canal. I would say that I hope the Governments and exhibitors will co-operate and put up good displays at this coming show.

Have the shows paid for the trouble? You cannot figure out the value of

exhibitions in dollars and cents. The great value of exhibitions is the impression it gives, and it is through impressions that we reach our conclusions, so that we cannot set down the value of exhibitions. I am in favour of exhibitions all the time, not that I have any hope of a continuation of further trips, but I was always a great supporter of exhibitions. They do an untold amount of good. I would say then that the outlay and the time was very well spent. Whether the effect on the English growers will be long-lived or not I do not know. You all noticed last year the photograph of the entry that took the first prize at the first Show. I expected my work would be very easy as Canadian judge in finding fault with the English pack, but do you know what happened? I found—whether they were sent for, or strayed over there—two expert packers who had been engaged to put up these exhibits, and they were almost the last word in packing. You can readily see the great handicap to Ontario and the Canadian exhibitors. I had to look for some other means of combating the two-to-one judging, and my only plan was to go down to the bottom of the boxes; there I found plenty of reason why they should not have prizes. This work has been very stimulating to the English growers; they have adopted the Canadian apple box and they are already packing, but outside of Cox Orange, I do not know any English variety that would be suitable for boxing to any great extent. They are caring for their orchards better than they used to. I had a peep into some of their orchards, and to my mind they were not at all promising—trees closely planted and not spreading. If it is true, as they claim, that their fruit is as good as ours, you can imagine the wonderful difference between two cases, one shipped from Toronto to Liverpool and then on to London, as against the other produced by the local growers and drawn to the market in motor cars. But I find the sale of their apples would only affect our fall varieties, with the exception of one or two varieties such as Newton Wonder and Bramley Seedling.

A great industrial depression has spread over the land there. The great shipbuilding plant on the Clyde River, where hundreds of thousands of men were engaged, were closed down entirely. The same can be said of Newcastle-on-Tyne and other shipbuilding points. You can readily see then why the Canadian apples are not selling at very high prices.

I would like also to state that I made an investigation of the peach shipments to the Old Country. The bulk of the fruit was handled by George Munro, Ltd. He reports the fruit as landing, some in good condition, but in twenty-four hours showed signs of decay or brown heart, and completely broke down. He also stated that there is a general objection to the yellow flesh varieties, an objection that is not well founded, but it is hard to make the average Englishman change his mind. Our peaches, too, landed just when the English-grown fruit was at its best on the market. He also reports that the packing of the peaches was faulty. Two tiers were put in each box, while experience has shown that one tier in a box is accepted as the right way. In answer to my questions, Mr. Munro was very emphatic in pronouncing the exporting of Canadian peaches as not being a paying commercial proposition, and I may say I fully agree with him. The same may be said, I think, of grapes and tomatoes. There has been fairly good success in the exporting of pears. We sent peaches to the Old Country in 1910 which landed in first-class condition, but they cost us 10 cents each peach, showing that the ordinary grower could not ship peaches successfully. Peaches for shipping to Great Britain must be packed carefully, cooled, wrapped, one tier in a box, and there is a great deal of cost involved in picking, packing and selecting, so that I repeat that I do not think the shipping of peaches to the Old Country a paying proposition.

Mr. Carey then presented the medals as follows:

RESULTS IMPERIAL FRUIT SHOW, 1922

OVERSEAS SECTION.

SIX BOX EXHIBITS:

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| Wealthies | 1st. | W. L. Hamilton, Collingwood. |
| | 2nd. | Harry Ryrie, Oakville. |
| Snows | 1st. | W. L. Hamilton, Collingwood. |
| | 2nd. | Fred. Schuyler, Simcoe. |
| McIntosh | 1st. | W. L. Hamilton. |
| | 2nd. | W. F. W. Fisher & Sons, Burlington. |
| Kings | 1st. | H. C. Breckon, Bronte. |
| | 2nd. | H. C. Breckon, Bronte. |
| Golden Russet | 1st. | J. F. Osborne, Newcastle. |
| | 2nd. | W. L. Hamilton, Collingwood. |
| Spy | 1st. | W. F. W. Fisher & Sons, Burlington. |
| | 2nd. | P. W. Hodgetts, Clarkson. |
| Blenheim | 1st. | H. C. Breckon, Bronte. |
| | 2nd. | H. C. Breckon, Bronte. |
| Jonathan | 1st. | W. N. Langell, Point Pelee. |
| Cox Orange Pippin | 3rd. | M. C. Smith, Burlington. |
| Spitzenburg | 2nd. | Smith Bros., Oakville. |
| Greening | 1st. | H. C. Breckon, Bronte. |
| | 2nd. | Smith Bros., Freeman. |
| Newton Pippin | 1st. | C. W. Challand, Simcoe. |
| Stark | 1st. | W. H. Gibson, Newcastle. |

THE BEST ONTARIO EXHIBIT (Kings), H. C. Breckon, Bronte.

MR. HODGETTS: I think an explanation is due in regard to that second prize for Spies. It was not the intention of the Secretary to exhibit at this Imperial Show. The packing of the apples was carried out at Clarkson at my place; shortly before shipping it was found that we were still short six boxes of Spies, and these were taken out of my orchard.

What we have been trying to do at these shows is encourage the men who have good commercial orchards in the Province. It is a little difficult for us to go all over the Province to get the fruit because the time is so short from when the fruit is ready to be picked until it has to go forward. This Show in London has been set for the convenience of the English growers and not the Canadian growers. Our fruit has to leave Ontario points the first week in October to get over in time for the Show. You can understand what that means with Spies and some of the other winter varieties. It was necessary to get the fruit as near one centre as possible, and for that reason we did not visit some of the outlying orchards where we might have got just as good fruit.

I want also to make an explanation about the second prize on Greenings, won by Smith Brothers, of Freeman. We did not feel like taking the best of Mr. Smith's apples for the Imperial Show, because we were counting on them putting up a good exhibit at the Royal, and they did. Their orchards won first and third prize for the best 100 box lot of apples in the Royal Show at Toronto. That was one of the best winnings Ontario made at that time. We knew the British Columbia growers were coming down with several carloads of fruit, and they were bound to carry off some of the prizes when coming in competition with Ontario. When the fruit was put on the stands, it was remarkable in appearance and packing. The judging was done by Mr. Rees and Prof. Peck from New York State, one a western man and the other, originally, a Nova Scotia man. The British Columbia men objected that there was no western man judging, but we pointed out that Mr. Rees was from Oregon and educated at the Oregon Agricultural College.

We first came in competition with British Columbia in the sweepstakes box. Our hope was based on the box put up by Paul Fisher, of Burlington, but we

lost to the box of Spitz packed by the British Columbia Growers of Kelowna. The 100 box lots were judged after that, and fortunately Mr. Smith, with 100 boxes of perfect McIntoshes, got first prize, and his brother with another lot of McIntoshes got third, so I think they deserve a great deal of praise that they won these high prizes for Ontario at the Royal Show, even though they did not get first prize at the Imperial.

The following committees were appointed:

RESOLUTIONS COMMITTEE—Mr. W. H. Gibson, Newcastle, Convener; Mr. Paul Fisher, Burlington; Mr. Jas. E. Johnston, Simcoe; Mr. Geo. C. Brown, Fonthill; Mr. Fred Sheppard, Queenston; Mr. W. Fraser, Trenton.

NOMINATING COMMITTEE—Mr. Wm. Fletcher, Clarkson, Convener; Mr. E. F. Palmer, Vineland; Mr. L. K. Shourds, Wellington; Mr. M. Winters, Mount Brydges.

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## APPLE SCAB.

Prof. W. H. Whetzel, Ithaca, N.Y.

(Illustrated by Lantern Slides.)

Apple Scab or Black Spot or Fungus has always been present in the apple orchards in this country since the earliest days, but it is only since we began to make apple growing a big business and began to compete with each other in having fine fruit and an educated public that it became important. Apple scab is a plant, and one of the chief factors in determining whether this plant will make a good crop is the weather, but the weather is not the only factor.

I am going to ask you to use your imagination this afternoon. Where is the apple scab now? I do not suppose any of you think or worry about it; you had enough of it last summer, and you try to forget it all winter. That is where you make the first mistake. The time to think about it is now. I can assure you it has not disappeared from your orchards. The place to look for it at this time of year is on the ground. It is in the old leaves on the ground. It is not in the old apples because the scab on the old apples has all perished by this time. Some of the scab lives on the twigs, but that is of no importance; for all practical purposes this apple scab is on the leaves on the ground. If we look carefully at one of these leaves, we will see little black pimples, sometimes many, sometimes quite scattered, and if we look sharp we will see where the old scab spots were last season. If the scab did not appear on the leaves of your trees, there would not be any in your orchard next year, and yet the average fruit grower does not think the scab on the leaves amounts to much. The apple scab fungus, during the winter, is not on the leaves but inside the leaves. If I took a sharp razor and cut through that leaf and magnified it enough and you could look into the edge of it, you could see inside the leaf a very complicated arrangement. It is a very interesting and very remarkable structure when the leaf is green, and when it is dead it is not so beautiful but still interesting.

In this labyrinth of cells and structures inside this leaf that you cut through, you see a strange body that does not belong on that leaf. That is the house that the fungus lives in during the winter, and from the little nose that stands up on the upper surface of the leaf, you have a good idea of what is in the leaf. There are thousands of these houses in each leaf. Inside each house, there are probably 100 or more little bags, and in each bag there are eight spores—there are always eight—eight in a row. But they are not in there now. What you have are these bags out of which the seeds or spores will be made, but they will be

ripe and ready for business in the spring when the buds begin to open, when the first green begins to appear.

When the fungus gets ripe, the tree is beginning to send out its green leaves in this form. If any of these spores are ripe before that time and are discharged into the air, they float away; if they fall on a bud like that, it does not do any damage because there is no green there. The fungus can only establish itself on some green part of the plant, and therefore, during the many generations that the apple scab plant and the apple tree have lived together, they have come to work together, so to speak. The scab fungus is ripe when the apple tree is sending out its leaves, and that is the first danger point.

But the spores do not come out of their houses until a certain thing happens, and that thing is rain. When the water falls, one of these little bags begins to lengthen and pushes its nose out of that little pimple, and then suddenly the top comes off, and its spores are shot into the air perhaps a quarter of an inch. That is to get them above the leaves. Then a little breeze blows, even the action of the rain dropping will stir up enough breeze to float the spores. If you are in the orchard when these spores are being discharged, you will breathe hundreds of them into your lungs, but you won't get apple scab. But if any of these spores are carried out to a bud in that condition, then something does happen.

The leaves when they first come out of the bud are hairy; the outside of the leaf is exposed; the inside of the leaf covers the blossom in the centre of the bud. During this period some of the spores will lodge in the hairs of these leaves, and in an hour or two begin to germinate, and after five or six hours they send out a long sprout, and that grows among these hairs and finds a place where it can get through the skin of the leaf, and part of that seed goes down that tube underneath the skin of the apple leaf, and the old spore travels up. The old spore is above, but the fungus is safely inside the apple leaf just under the skin. Then the rain passes over, the sun comes out, and everything looks lovely. Sometimes you go out after the rain and spray very thoroughly and energetically. If the fungus could laugh, he would have a good laugh at your expense, because you cannot touch him after he is under the skin of the leaf.

In ten days or two weeks, after the bud is opened up and the leaves expanded, you will find on the inside of the leaves faint brownish spots beginning to form. The fungus has been growing, and it has grown so much that you can see the spot, and if you magnified that spot so you could see it, it would look like roots growing out of the centre with little stalks, and on the end of the stalks there would be another seed, different from those in the bags, because this plant has two kinds of seeds. The seeds in the old leaf on the ground are in bags; the seeds on the stalks are single spores on the end of each stalk. We call them summer spores, and the others are called winter or asco spores.

These spores in the bags do not all get ripe at once. Each bag ripens all its spores at one time, but the other bags ripen at other times, so that one of these fruit bodies would shoot spores for weeks or a month. In this section probably these winter spores are being ripened and shot into the air for six weeks more, or less. If the weather is warm and favourable, they ripen more quickly; if the weather is cold, they do as the apple does, they do not develop rapidly. If it is a rainy season, still there would be spores coming from the old leaves on the ground whenever it rained.

Before we go on with the story, I want to point out two or three practical things. If it is true that these spores are shot from the leaves on the ground, if this is the time when the tree is first exposed to infection, that must be the time to make your first application of fungicide to get control. In New York State we

used to spray at the dormant stage; that was done to control San Jose Scale, but it does not control scab, because in the first place there are no scab spores doing business at that time; and in the second place, if they were, the spray could not hurt them because there is no green that they can attach themselves to. So there is no point in making dormant application. If the weather is dry when the bud is pushed out green like that, and stays dry, the bud will reach that stage, but it won't be in danger from the scab until it rains. Therefore, you have two things to guide you: You have the weather, and you have the stage of the development of the buds. Just as soon as the buds show green, then get one of your eyes on the weather and keep it there.

A MEMBER: How about fogs?

PROF. WHETZEL: Fogs won't wet the leaves enough to make the spores. Just before it rains is the time to make your first application. You make this application not to kill the fungus, because it is not there, but you make it to protect the leaves from the fungus that is coming when it rains. Common sense tells you you must make the application ahead of the rain. This is to protect against diseases of plants caused by fungi that have spores. And the nearer the application is made to the rain, the better. If you can spray your buds this afternoon, and the rain starts to-night, you have done a good job; if you sprayed two days ago, you have lost out a little, because in those two days, the bud has grown, and the base of the bud is not protected. The point is in getting all the green part covered, and the farther you are away from the rain, the more of the leaf surface is going to be unprotected, because it has grown in the meantime.

Lots of men think that the application washes off. If you have done a good job of spraying, there won't be enough washed off to worry about. A good application of fungicide will protect from ten to twenty days no matter how much rain there is. It is the new growths that come on, because in good weather, the buds grow faster, and it is that which requires you to make an extra application.

The first application we called the Delayed Dormant Application, in the State of New York—delayed until after dormant. We find in New York, three years out of five, that is the most important application, because if we protect the parts exposed, then we ought to get a period of sunny weather in which the buds grow until they have reached this stage. It not infrequently happens that one application made there, and one after the buds fall, will give a perfectly clean crop of apples. In a rainy season it won't.

MR. MACOUN: Do you know how long these spores will stay alive before they germinate on the leaf?

PROF. WHETZEL: Not very long—probably for several days; it would depend on the weather. Most of them that do damage start to grow during the rain period when they were scattered. It is not the single shower that does the work, it is the day or two of rain or moist weather during which the fungus has a good chance to grow.

PROF. CAESAR: That is probably what was meant when the member asked about fogs?

PROF. WHETZEL: That is different again. If you had a rain and then you had a fog or wet weather for a couple of days, that would be fine for the growth of the fungus, but the shooting of the spores would not take place in a fog; you must have rain.

Q.—Supposing these leaves were ploughed under? A.—You can suppose that, but you could not plough them all under. If you could that would be fine. Q.—How about fall ploughing? A.—I do not think fall ploughing is a good

practice. If you could plough early enough in the spring, all that you turned under would be destroyed; the fungus cannot get out of the ground, but the best plougher cannot plough all of them under, and one leaf might have a million spores. You have got to put the fungicide on the trees; there is no other way by which you can escape scab at the present time.

Q.—Could not the leaves be raked up and burned? A.—If a man had a 100-acre orchard, it would be rather expensive. Spraying is the only known way to meet the application.

The next application that ordinarily would be made would be the pink application. But sometimes during the wet season, a good deal of growth occurs between these two sprays, and in ten days or two weeks the blossoms have reached this stage, and if they are not protected, there is going to be scab, so other applications may be necessary depending on the weather. You can make three applications if you want to be sure, and then you might not be sure. You can make an application when the buds are like that, and still have scabby fruit, if you do not do it at the right time. It is not only the stage of the bud, but the weather; keep ahead of the rains and keep the green growing parts protected.

The next application is after the blossoms have opened and the petals have fallen off. That is four applications already: Delayed Dormant, Pink, one that may come before the Pink, called the Pre-Pink, and the Calyx. And how many more applications you may make depends on the weather, and you have got to figure that yourself. If you had a dry spell and practically no rain from the time the buds show green until the calyx fell, you would be safe, but that is a dangerous gamble.

Q.—Would not the development of the spores depend on the temperature? A.—Not much; the spores shoot up when it is rather cold. The fact of the matter is when the temperature is high, you are much more apt to have less scab than in cold weather.

After the spores have come out of the leaves on the ground, you might think your troubles are over, but no matter how well you spray and protect your foliage, you will always have a few leaves that will be missed and that will have an occasional scab. If the weather during July and August, becomes rainy, and particularly if you have done a poor job of spraying in the spring, then you want a later spray, because those spots on the under sides of the leaves will produce thousands of spores, and one rain, when there are ten scabby leaves to a tree may be enough to scab all the fruit or practically all on that tree unless it is also protected, so that you need to make an application when the apples are this size or larger. In fact one season a man said he did not have a scabby apple, and then three weeks before he picked, he got a lot of scab and lost 100% of his crop. It would have paid him to make an application late in the season. Many of our growers, the last of July or the first of August make one or more applications to protect the growing fruit. It is not uncommon to have the infection develop after the fruit is picked; sometimes in storage the apple scab fungus develops.

You say, "I have sprayed my orchard thoroughly and have had clean apples, how does it happen that I get scab the next year?" For the reason pointed out, that you never can protect your trees so well that none of the leaves have scab, and more than that, there are apt to be neglected trees that you did not spray, or leaves from nearby orchards may blow into yours, so there is practically in every orchard, always enough scab fungus in the leaves to supply the necessary spores to start the infection.

You had scab this year, and you are sure to have scab next year. The leaves

are full of it. Probably every man has enough scab in the leaves on the ground to scab his apples for the rest of his life, but you may not have any scab next year, even if you do not spray, but that would be because the weather was unfavourable to these spores at the right time. The modern fruit grower cannot take a chance on not spraying. As a matter of insurance, you have to figure on a minimum of three applications per season.

If I can sell you these two ideas: First, that the weather is the important guide along with the development of the bud, and that it is the new growths that have to be protected constantly ahead of the rain—if I can sell those two ideas and the reasons for them, I will make you more money than anything else I could sell you. These two are the main factors.

In the apple growing section of our State, in ten counties, this year we supplied during the six months of the growing season, from April 1st to October 1st, a special plant doctor whose business it was to go into his county and tell the fruit growers when to spray and what to spray with. These growers paid for this service, and only the men that paid for it got it. The growers who get this service spray when they are told to spray, and with the stuff they are told to spray. Of course, if one man wants one thing and another another, and they are both equally good, we do not make any difference. We have a man who supervises these field men, and we have in addition to that a man detailed at the Weather Bureau with headquarters at Rochester who forecasts the weather for our Spray Service. If it is fifty-fifty whether it will rain or not rain, he prophesies rain; the regular Weather Bureau prophesies no rain. When he sees a rainy period coming from the west or east, two days ahead, he telephones the young fellow in charge in that county. He in turn calls up one man in a dozen different localities, and tells them "To-morrow or the next day is the day to spray, using so and so." Then each man calls up three of his neighbours, and they in turn call three more, so that every man in the service is notified. In a good many counties, the man has to repeat back what he has been told, and he also enters on a card just what was told him, and these cards have to be turned in at the end of the season, so if anybody fell down we would know who it was.

In addition to that, the young man is busy for the next few days travelling through the county seeing that the growers put the right application on, and that they understand how to use it. Our growers are so much sold on the importance of the weather and the difficulty of controlling this disease, that although it costs them from $1,800 to $2,000 a year for this service, they pay it not only gladly, but yell for it like children do for a certain patent medicine. It is our trouble to get enough competent young fellows to handle the work. Ten counties were doing it this year, not only for apples, but in some counties they are doing it for the potatoes.

Mr. Fairbairn: Tell us a little more about the production of summer spores.

Prof. Whetzel: When the asco spores, or winter spores from the old leaves on the ground shoot into the air, they are carried to the underside of the leaf when it is like this. They start to grow, but you cannot see any trace of them for several days. By the time the leaves have expanded you begin to see faint greenish-brown spots on the inner side of the leaf. If you look at it carefully, you will see threads running out from the centre, and on these threads just under the skin of the leaf, are little stalks; they begin to push up through the surface of the leaf and on the end of each stalk a little seed spore begins to swell up and grow. The first time it rains it will knock these spores off and wash them down on to the apples and leaves below, falling on the upper surface of the leaf

below. They sprout like the asco spores into the inner surface and form other spores, and you can get many crops of summer spores—every two or three weeks if it rains. But you do not get any more crops of these spores until the next fall. There is one crop of asco spores, and that is in the spring, but there are many crops of summer spores depending on the number of rains you get.

Q.—Spores do not stay on anything but leaves?—that is the winter spores? Are they on the ground? A.—No, only on the leaves. This fungus cannot live on grass or fence posts or on the ground, but only on apples and apple leaves.

Q.—Can they live on wild flowers? A.—Only probably. There is a scab fungus on pears, but it is a different species; you could not take the apple scab and put it on pears or vice versa. Asco spores are not produced until March, April or May, but here is what happens: The roots of the fungus are just under the skin of the leaf all summer; that leaf falls to the ground, and then the fungus can grow into the leaf. During the summer the apple leaf has too much energy to allow the fungus to go deeper than just under the skin, but as soon as that leaf is dead, then the scab goes all through that leaf, and feeds on the dead substance in the leaf and forms these fruit bodies that I told you about.

Q.—If a spore lights on an unprotected leaf, will it develop regardless of weather conditions? A.—No, it will only grow if there is moisture there.

Q.—Then dry weather will kill it? A.—Yes, in time, because it cannot stand many days of dry weather, that is winter spores; summer spores will last a little longer.

Q.—When do you spray for dry weather conditions? A.—I cannot tell you.

Q.—You do not know of any application to put on the dead leaves to kill the spores? A.—If you soaked the leaves with copper sulphate, it would not kill the spores. The water in the solution will go through and get to the spores, but the copper will stay in the walls, and these spores will go right on and develop just the same. Various schemes have been tried, but none have been found very feasible at all.

Q.—Owing to this system established in New York State, what results have been obtained? Are the apple crops better as compared with the crops for years previous to the war? A.—I do not think I can answer in those terms. We began this system during the war; it grew out of the food supply situation for other crops, and then it was adopted for fruit growing work. The only way I can answer is that it has evidently made money for the growers, otherwise they would not continue to support it in increasing large numbers.

We have in some of the counties, Criterion Orchards. We divide the county up into communities or zones, and we have a Criterion Orchard in each zone. This is usually a small orchard, and the grower agrees to treat it exactly as we direct. We take that orchard and compare it with an orchard nearby that was not in the system, but treated hit or miss, and there is always shown a very much higher percentage of control in our Criterion Orchard than in the orchard not in the system. Then we make a comparison with an orchard in the service, and while they don't get as high a percentage as in the Criterion Orchard, it is shown they get a higher percentage than the fellows outside the service. We can easily show a grower it is highly profitable to him to pay his $5 or $10 or $30 or $40 for the service for the year. I am quite sure, that the apples have been on the average cleaner since this system was inaugurated than they were before, because of course there is much more treatment of apple orchards now than there was five or ten years ago.

Q.—Do you use a high pressure spray? A.—They use all kinds. A good

many men spray with guns now, and all kinds of apparatus. The pressure is 50 lbs. to 200 or 300.

Q.—Would you use a gun? A.—Personally I would not use a gun; I would use a rod and nozzle.

Q.—Supposing it should rain before you got the spray on, would you spray? A.—No.

Q.—Would you spray during the rain? A.—Yes, if the hired man would stand for it; it would be better than not to spray at all. To be sure, it would not have a chance to dry, but at the same time, if it was only a drizzle, it would kill a good many spores. The thing to do is wait until the next clear period has past and another rain coming on, and then spray.

Q.—Do you think the Codling Moth is as injurious as Apple Scab in the State of New York? A.—One or two applications at most will hold the Codling Moth, but I do not think many of our growers worry about the Codling Moth, but they all worry about the Apple Scab.

Q.—Do you recommend lime sulphur? A.—I never recommend anything. I do not care what you use. There are a lot of things you can use. There are two fungicides for Apple Scab, sulphur and copper. You can get sulphur in a variety of forms and copper in a variety of forms. You can use any of these; they can all control Apple Scab if properly applied.

Q.—The fellows who follow your directions—what do you tell them to do? A.—We put out a spray calendar and a dust calendar to our men and they are at liberty to use whichever they want. The important thing they hire these men to do is to tell them when to make the application and to see that they are doing it thoroughly. Of course if a man was going to use Bordeaux mixture we would warn him it was dangerous if he applied it at the Calyx application, because he would almost certainly get russetting fruit; very few of our growers use Bordeaux mixture for that reason. It will control Scab but it will rust the fruit three years out of five with us.

Q.—If you have orchards absolutely under your control, what do you use? A.—Either dust or spray, depending upon what the community at large want used; sometimes we run both.

Q.—What kind of spray? A.—Lime-sulphur in the State of New York.

Q.—What definite mixture do you use? A.—When we use lime-sulphur, 1-40.

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## THE CONTROL OF THE CODLING MOTH.

L. Caesar, Provincial Entomologist, O.A.C., Guelph.

The Codling Moth is more difficult to control all over the province some years than others. This condition is usually due to the weather or other natural factors, which play a large part in determining its abundance, being specially favourable to the insect. When these favourable conditions happen to coincide with a small crop of apples it is difficult to obtain a high percentage of worm-free fruit in any orchards except those in which spraying has been well done for several years previously. In these orchards, with comparatively few exceptions, good results may be obtained even in the most favourable season for the insect. Where, however, the crop is small and the insects have not been kept down to a minimum in previous years it is logical to expect serious injury; for the moths have an instinct to lay their eggs near or upon the fruit; hence, the smaller the number of apples the larger the number of worms that will attack them and

the greater the chance of some of them not being destroyed by the spray and entering the fruit.

But some years, like the last, the Codling Moth is not any more difficult to control than usual in the greater part of the province including the warmer parts like Niagara or the south-western counties which are usually worst infested, while in other parts it is very difficult to secure good control and in spite of the most thorough spraying just after the blossoms fall there will be many sideworms.

This raises the question of why such a difference should be. I do not know whether I have discovered the correct explanation or not, but it is my belief, based on observation, that proximity to cold bodies of water is the determining factor in such a season. I think you will find that it was the orchards which were situated near the Great Lakes, as for instance, Burlington, Oakville, Brighton and Trenton which suffered most this year, while the orchards situated three or four miles back from the lakes were comparatively free from worms. If I am correct in this conjecture the explanation would seem to be this: That in orchards under the influence of the cold breezes from the lake the development of the Codling Moth was much slower than in other orchards, and, what is still more important, the cold retarded the insect more than it did the fruit. So that whereas the regular Codling Moth spray remained on the apples back from the lakes long enough to control the worms, yet near the lakes this spray had nearly all disappeared from the fruit before the worms hatched out from the eggs and began to enter the apples. Now while apples are small they are covered with little hairs or pubescence. This remains on until they are nearly an inch in diameter and where it is present the worms seem nearly all to enter by the calyx end, apparently because these hairs make side entrance difficult. It may be also that the hairs are a great aid in holding poison and thus securing the destruction of the worms. But once the pubescence is off a much larger percentage of the worms try to enter the side and as the poison, though present in the calyx end, will have disappeared from the side, more worms will succeed in entering the apples there.

If the above is a correct view of the case the logical step in localities where cold winds from the south of the lake retard the development of the insect is to give an extra application of spray between three and four weeks after the regular Codling Moth application. This spray will catch most of the first brood larvae as they are preparing to enter the fruit. It is the first brood we must aim to destroy, as its destruction means no trouble from the second brood. There is no other single and helpful suggestion for control than this late application which I can give you. That it will work I have a good deal of proof. I have tried it in a number of cases, and also have observed that when Mr. Ross and myself were studying the Apple Maggot and applied a spray the last week in June or the first week in July we regularly had excellent control of the Codling Moth; and it would be about the end of June or in some districts about the first of July that the extra application I have just mentioned should be given.

If the weather is fine at this date I should use for this spray arsenate of lead and water alone in the proportions of 1½ pounds of the powder form or 3 pounds of the paste form to 40 gallons of water. In a wet season Bordeaux mixture of the strength of 2 pounds of bluestone and 6 or 8 pounds of hydrated lime to 40 gallons of water could be used along with the arsenate of lead; or for the Bordeaux 1 gallon of lime-sulphur to 50 or even 60 gallons of water might be substituted.

In conclusion let me once more call attention to the fact that the better an orchard is sprayed for Codling Moth one year the easier it will be to secure good control the following year. This cumulative value of spraying is a great encouragement to the doing of good work, and I am of the opinion from what I have observed that it is almost as important towards the control of Apple Scab as of the Codling Moth.

Q.—Is there any evidence of a second brood? A.—Yes, there are in some districts; it is a late first brood. The way to combat that second brood is to knock out the first brood, and to knock it right out I would give that second spray three weeks after your blossoms have fallen.

Q.—Does that require a stronger solution? A.—No.

Q.—Do you think when the weather improves it would be better to wait two weeks after the blossoms have fallen? A.—I would put on one spray immediately after the blossoms have fallen; and I would wait for at least three weeks to finish my spraying.

Q.—You would not delay that spray three weeks on account of scab? A.—No, I am thinking of the Codling Moth.

Q. –Scab and Codling Moth go hand in hand? A.—They do, but you spray definitely for Apple Scab.

Q.—Brown Rot Fungus in the blossoms of the tender fruit is of more importance to us than this? A.—Brown Rot Fungus attacking the blossoms of cherries and plums is very important to some growers, but it is not of much importance to those who are here.

Q.—That is the reason some of us do not come here? A.—I thought it might be better when we get to the fruit meetings at Grimsby and St. Catharines to go into that subject.

Q.—What quantity of arsenate of lead would you use with 40 gallons of water? A.—It would depend to a large extent upon how clean your orchard was. If your orchard has very little Codling Moth and has not any other serious biting insect, I would be inclined to use only one pound, but it never hurts to put in a pound and a half to 40 gallons.

Q.—Does it make any difference how you mix it up? A.—If you are using arsenate of lead paste, you have to mix it up until it looks like milk, but using the powder fill your tank up and start your agitator going and pour it on the top gradually, and it will mix.

Q. –Do the second brood of Codling Moth go through the same stages as the first? A.—Yes, it hides underneath the bark of trees and then comes out as a moth and lays its eggs chiefly on the apples, but some on the leaves, and works into the apple.

Q.—What about the time? A.—In the Niagara District we would get them early. You will find them beginning to lay eggs about the first week in August and they would get into your apple about the end of the month or after the apple has started to grow.

Q.—Do you find the worms eat leaves? A.—No. I have never seen the Codling Moth feed out in the open on the leaf; I have in jars when they had nothing else to live on.

## CASEIN SPREADERS.

WILLIAM A. ROSS, ENTOMOLOGIST, VINELAND STATION, ONTARIO.

It appears to be the opinion of most entomologists that the value of Casein Spreaders is not yet proven.

In our own spraying experiments in graperies last year, the addition of calcium caseinate or kayso to Bordeaux mixture was of no advantage so far as we could see, nor did the addition of kayso increase the efficiency of nicotine sulphate in controlling the grape leaf-hopper. I also saw some graperies which had been sprayed with Bordeaux mixture and kayso and Bordeaux mixture alone, and here again I could see no difference between the two blocks.

In view of the fact that I had had so little experience myself with kayso, I thought it advisable to get the benefits of the experience of other entomologists, so I wrote to several men, and this is what they had to say about it:

PROF. CAESAR, O.A.C.: "As to kayso, after using it twice at Simcoe, once for the pre-blossom spray, and next for Codling Moth spray, it caused on the four rows to which it was applied so many little brown areas that I decided that if I were to give another application the leaves would probably almost all dry out and therefore be destroyed. Trees right along side on which there was no difference in spray mixture, except the absence of kayso, were uninjured. Lime-sulphur and arsenate of lead were the substances used. Later in the season the foliage recovered. Kayso lime-sulphur did not adhere any better so far as I could see than the ordinary lime-sulphur, or at any rate did not give any more lasting effect in warding off late scab. I used 2 pounds to 160 gallons."

PROF. P. J. PARROT, Geneva: "Lime-sulphur alone—2.12% scab, 1.95% Codling Worm. Lime-sulphur and Casein—4.82% scab, 2.05% Codling Worm. Check—88.30% scab, 7.66% Codling Worm."

DR. QUAINTANCE, U.S. Bureau of Entomology: "Our experience with Casein Spreaders, including kayso, coincides pretty well with that of other entomologists. They do seem to give a more uniform covering on the plants, but, in the case of apples, especially, we have not noted any increase in the efficiency of the spray in Codling Moth control. On the whole we feel that more work must be done before it can be admitted that Casein Spreaders are of particular advantage."

L. A. STEARNS, Associate, State Entomologist, Virginia: "Conclusions based on experiments conducted with Casein and Flour Paste Spreaders on apples and peaches—(1) Neither of the spreaders used increased the efficiency of the spray solution in protecting the fruit from insects and diseases. (2) The same was true in the case of the foliage. (3) It is doubtful that the addition of a spreader such as Casein would pay for the increased cost of the spray. (4) Nicotine-sulphate, 40%, and Casein (kayso) as used were uncongenial."

A. L. LOVETT, Entomologist, Oregon: "As far as the increased efficiency obtained by the use of a spreader in the poison spray solution is concerned, there is room for reasonable doubt and probably in the hands of a careful manipulator there is little to recommend the use of a spreader. They do, however, assist in overcoming the results of a poorly applied or ill-timed spray application. Spreaders are also of particular merit in combination sprays because of their action in retarding the chemical re-action to more nearly its maximum efficiency. They are likewise of merit in the late cover sprays where the heavy, blotchy spray covering, otherwise obtained, and so decidedly undesirable, may be minimized or eradicated entirely."

All this goes to show that Casein Spreaders are still in the experimental stage. In my opinion no one, at the present time, has any right either to recommend them or to condemn them until further work has been done. Those growers who wish to use kayso or some other Casein Spreader would be well advised to try it out only on a small scale, especially in view of the fact that in Caesar's experiments the kayso-lime sulphur caused burning.

Casein Spreaders may prove to be of considerable value in minimizing the blotchy spray on fruit, and they may prove to be of value in other ways, but I am positive that they will never, to quote from a kayso circular, "make a poor job good." In other words, they will never make up to any extent worth while for the lack of thoroughness in spraying.

Q.—Do you use glue at all? A.—No, we have never tried it.

Q.—It has been tried? A.—They use glue with lime-sulphur in making the wettable sulphur, but I think that will be largely dropped now we have the commercial wettable sulphur.

Q.—What is wettable sulphur made of? A.—It is composed of sulphur, hydrated lime and calcium caseinate—8 pounds sulphur, 4 pounds lime, ½ pound calcium caseinate, that is the regular formula, and 40 gallons of water. You make it up into a thick paste, using superfine sulphur. I would not advise anyone to make wettable sulphur; I would advise them to buy it already prepared.

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## RASPBERRY DISEASES.

J. F. Hockey, Dominion Plant Laboratory, St. Catharines.

In introducing the subject of Raspberry Diseases it is my intention to spend most of my time in a discussion of the two diseases, leaf curl and mosaic. Those of you who are most interested in raspberry culture will have copies of bulletins giving in detail the descriptions and controls for the fungous diseases. There are few of these causing any appreciable loss to the growers at present, except in isolated sections of the country. Practically all the fungous diseases are economically controlled in your general cultural practices of cutting out old fruiting canes as soon after picking as possible. Leaf spot, however, will not succumb to such treatment, but only accepts its fate when thorough applications of Bordeaux mixture are made. This disease caused a heavy defoliation of Marlboro in the London District last season (1922), but in the Niagara district it was unimportant.

Leaf Curl. Leaf curl is an old enemy recognized by practically all growers as a disease which renders a bush worthless. You will possibly have in mind a plant with small, dark green curled leaves on the sucker growth and a stiff, staring appearance. The leaves on the old canes bronze during midsummer and are much smaller than those of a normal healthy raspberry plant. They also show curling and wrinkling or puckering along the mid-ribs. The only thing to do with leaf curl plants is to dig them up, root and all (this is essential), and burn them. Or, as one grower chooses to put it, "shoot the horse." A systematic inspection of the patches and eradication of leaf curl plants as early in the spring as the diseased plants can be readily identified is the best means of eliminating the disease from your patches. This has been demonstrated by many growers to be not only practicable but economical as well, as several in the Niagara district have completely controlled the disease by this method.

Mosaic. While the mosaic disease is believed to be of similar causal nature, and is controlled by eradication measures only, still it is a much more

difficult proposition to handle. The disease is wide-spread in Ontario and steadily increasing, and not until the growers become more familiar with the symptoms of mosaic can we hope to achieve its control. A good many of you are familiar with the disease; some have confused it with leaf curl, but that makes little difference as far as the control is concerned.

The leaves of a raspberry plant affected with mosaic have the common symptom of mottling. This mottling consists of irregular light and dark green areas scattered over the leaf. On old leaves the darker areas are slightly raised or puckered; on the young leaves this is not so evident. To be certain of the presence of mosaic on a plant care must be taken to note whether all the leaves above the oldest one showing symptoms, also show mottling. If the youngest leaves show no symptoms be careful before you condemn the plant. This season there were many plantations which during wet spells developed leaves having a more or less mottled appearance, whereas those developing later in the season were quite normal. Conditions of this nature increase the difficulty at first, but after one or two seasons' examination of mosaic plants I feel sure that you will find no difficulty in picking out the majority of diseased plants.

The control of this disease is not as yet 100% efficient. Handle diseased bushes the same way I have outlined for raspberry leaf curl, or as Prof. Caesar encourages you to handle peach yellows and little peach with the additional precaution of getting out as much of the entire root system as possible. Why the entire root system? For this reason, every growth that comes from the roots of a diseased plant is diseased and will always be so, as far as we know. Therefore if you leave pieces of the roots in the ground you are running the risk of those roots giving rise to diseased suckers. That sounds like a rather tedious proposition you may think, but if you follow a systematic method as I will outline I am confident that we can soon put raspberry mosaic in the background.

Commence with the source from which you intend to secure plants for setting out a young plantation. Make sure that those plants are from comparatively disease-free stock. How? Last year the Division of Botany, Ottawa, through the St. Catharines' Laboratory, initiated a "certified disease-free raspberry" service, whereby certain plantations were systematically rogued and the grower given a certificate permitting him to sell his raspberry stock under that recommendation. Many of you received a circular letter giving a list of growers who had such stock for sale. (I will deal with this service more fully later on.) That is one way of getting a good brand of stock. Another way is by your own observation. If you are familiar with the disease, you may be able to pick out one of your own or a neighbouring plantation which has little or no mosaic in it. If so, go ahead and dig your plants. But whatever you do, do not take plants from a plantation which you believe has any considerable amount of mosaic in it. If you do you are inviting trouble, and in all probability will see your mistake when your plantation begins to turn out berries.

We will take it for granted that you have now secured the healthiest stock you could get. What time of the year you plant it depends on your own experience, but from the time those plants begin to grow take a good look at them two or three times during the first season and pull out any diseased ones you may find. No man's work can be perfect in identifying this disease, so it is probable that a few diseased plants have been overlooked when the patch from which you got your stock was being rogued, and you want to get those out as soon as you are sure there are any in your patch. Do not forget to dig out all the roots. It is easy to do the first year and will well repay. Any gaps

caused by the removal of diseased plants may be replanted at any time without fear of soil infection.

The following year look over the patch again and dig out the plants that show mosaic symptoms. There should not be any, but you may find a scattered one or two. Since this will be the year to get a good harvest of young suckers from between the rows it will pay you to make a thorough job of your rogueing. Perhaps you want to start a new patch so that you can take out that old patch that is so full of disease. There is your chance. I see no reason why we should experience much difficulty in having a splendid array of healthy plantations throughout our fruit growing districts in a few years' time if every raspberry grower will do his share.

There is a tendency on the part of some growers to lay the blame on the nurserymen. I think I am correct when I say that over 90% of the raspberry stock planted in commercial plantations has come not from the nurserymen but from your own fellow growers. I know for a fact that in some sections of the district 100% of the plantations are planted with stock either from the growers' own patches or their neighbours'. Charity, they say, begins at home, so don't blame the nurserymen, they may be more careful in their selection of plants than you are.

As for the older fruiting plantations which have mosaic in them it is impossible to set a hard and fast rule. If they are over four or five years I should say let them go until such a time as you can get a new plantation of healthy stock in bearing. Not only is it difficult to eradicate the entire root system of the older plants because of their extensive spread, but it will be three years before you will be able to pick fruit from the plants you have put in to fill the gaps caused by rogueing. If, however, you wish to rogue a few rows in order to secure stock for planting from your own patch you may find it profitable to do so. In any plantation over two years old I would not recommend rogueing where there is more than 5% of the plants affected with mosaic.

Certified Disease-Free Stock. As I have already mentioned this service I would like to add a few words of explanation. Last year was the first season in which this work has been done, and it is therefore in its experimental stages. The reasons for wanting to procure reliable sources of raspberry stock, especially free from leaf curl and mosaic you will readily see from the previous discussion. Briefly, they may be enumerated as:

1. The inadvisability of attempting to rogue fruiting plantations as a control.
2. The necessity of starting a plantation with healthy stock.
3. The difficulty of securing healthy stock.
4. To these may be added the statement that we have not yet been able to get results from spraying to control the spread of mosaic. Let me say that such experiments are as yet a pure speculation, and may offer no relief, but we are hoping to find some means of keeping a plantation healthy after it is once planted with A1 stock.

The urgent necessity of adopting control measures has been seen by many men not only in Ontario but in New York State where the situation is reported to be considerably more serious than it is here. There is no reason why we should wait until our plantations are in the same category as those across the border when we already have all the available information in our own hands. As it is some of our growers are obtaining from one-third to two-thirds less of a crop from their patches than normally. Such patches have from 40 to 90% mosaic in them now, but it does not take more than a few years at the present rate of spread of this disease to bring the percentage of mosaic from 5 or 10 to

50 or more. And while this is going on you are continuing to dig young plants from a diseased patch and carefully transplant them to a young plantation. In such cases you will find, as I have by actual count, that where you had 2, 5, 7 or 10% mosaic in the old patch you have transplanted actually 5, 10, 15 or 20% diseased plants and in some cases more into your new patch. That surely furnishes sufficient proof of the necessity for care in the selection of your stock.

The inspection service for certified stock necessitates two inspections, and makes it necessary that all diseased plants be rogued in the presence of the inspector. Anyone wishing to sell certified stock is advised to apply to the Dominion Laboratory of Plant Pathology, St. Catharines, before May 1st, so that the patches may be carefully inspected in the spring for leaf curl and the general health and vigour of the plants. Last year it was necessary to discard some of the patches at this time, for we want to get the best available and rather than take some mediocre stuff we will do without. The second inspection comes during the summer, last year directly after picking so as not to hinder caneing operations.

There is no guarantee that this stock will be 100% free from disease. That is not humanly possible. But it is a guarantee that the stock is as healthy as we can get it in one year. Some of the plantations are absolutely free from mosaic, but these happened to be the smallest ones and consequently the available stock was soon used up.

There is a necessity for more sources of Cuthberts. These and the Marlboros are most susceptible to mosaic, and the former are by far the most important commercial berry in Ontario, although I will say that some sections find Marlboro or Herberts best suited to their conditions. But the Cuthbert is "the" berry in the Niagara district, and I see no reason why we should discard it if our endeavours to control these diseases are met with the honest support of the growers.

Let me give you a word or two of caution concerning the purchase of stock. Beware of men who try to sell you "government inspected" stock or "inspected" stock or "certified" stock. All men who have stock certified by our service have a certificate stating so, and it is in your interest to see that he has that certificate. If in doubt, write us. We will tell you by return mail whether or not that stock was certified by us, and also give you a list of growers whom we know have good stock for sale.

This year we hope to get a better supply of healthy raspberry stock than last year. We all realize that the first year's results are more or less experimental, and bring out the defects most emphatically. Last year's results were not quite as good as we had hoped, but I am satisfied that the stock which was sold under our recommendations was vastly superior to the average run of stock in so far as the percentage of diseased plants was concerned.

This service is free for the asking, and if you have a young plantation in good condition that will produce a good crop of suckers or nursery stock, and you are desirous of selling such stock, apply to the Dominion Laboratory of Plant Pathology, St. Catharines, for the use of this service.

Q.—How long is required after you inoculated a plant before symptoms of these two raspberry diseases showed? A.—Pronounced symptoms of leaf curl showed in six weeks; with mosaic I had some that showed in three or four weeks.

Q.—May the diseases be brought on due to neglect of the plants? A.—We have not been able to notice any difference between weakly growing plants and strong, vigorous growing plants as far as susceptibility to disease is concerned.

Q.—What about cane yellows? A.—Common yellows as described in

the disease bulletins is a combination of leaf curl and mosaic. It is the fault of some of our own plant entomologists for the confusion of these two diseases; we are trying to eliminate the word "yellow" as quickly as possible. Cane blight is another; it is one of the hardest fungous diseases to control in a raspberry patch. The only thing is to cut out the cane as soon after the fruit is picked as possible.

## AMENDMENT TO THE CONSTITUTION.

On motion of G. A. ROBERTSON, seconded by L. K. SHOURDS, an amendment to the Constitution was made to the effect that in districts without local organizations the directors to represent them be elected by the Convention, but that the other sections be asked to elect their own directors at home and forward the names to this association to become the Directors of the Fruit Growers' Association of Ontario.

## THE FERTILIZERS ACT IN RELATION TO FRUIT GROWERS.

G. S. PEART, CHIEF, FERTILIZER DIVISION, OTTAWA.

Whether the fertilizer user happens to be a fruit grower, a vegetable grower, or the grower of any other kind of agricultural crop, he should understand the main provisions of the law which regulates the sale of fertilizer. The law was made to provide him with protection against fraud, and unless he understands it he will not receive the maximum protection it offers. I wish to stress this point because indications are that a great many users still have an indifferent knowledge of the Fertilizers Act, even though copies of the Act with regulations have been widely distributed in this country. Any fruit grower who has not yet received a copy may secure one by writing the Publications Branch, Department of Agriculture, Ottawa.

The only way to purchase fertilizer to advantage is on its value as shown by its analysis, and the law requires that all fertilizer must be sold subject to its analysis of the plant-foods nitrogen, phosphoric acid and potash. I briefly mention this at this time in order to make a general comment that there are indications that many farmers, fruit growers and others do not possess sufficient knowledge of the chemical terms used in connection with the trade in fertilizer to buy on an analysis basis. We may go further and state that some hardly know the meaning of the terms nitrogen, phosphoric acid and potash, let alone the different chemical forms in which they exist in the different brands of fertilizer on the market, and on which forms depend the value of the fertilizer for the crop and soil on which it is to be applied.

These facts are borne out by the character of correspondence we receive from the public. I shall not go into the question as to the kinds of fertilizer on the market in relation to the character of the crop and soil on which they should be used. This is a subject in itself, and properly belongs to those who direct our fertilizer experiments.

Prof. Harcourt, of the Ontario Agricultural College, Guelph; Mr. E. F. Palmer, of the Vineland Experimental Station, and Dr. Frank T. Shutt, Dominion Chemist, of the Experimental Farm, Ottawa, are all authorities of this phase of the question, and their publications and suggestions on the economic uses of fertilizer are for the asking. The results of their work should be studied, however, before the fruit grower will be in a position to use fertilizer with the greatest profit and buy fertilizer on the basis of analysis.

I should say that the time has come also for the fruit grower and other purchasers of fertilizer to stop leaning on the good-natured agent for information. In many districts the agent is still telling the grower what to buy, rather than the grower choosing the fertilizer he needs, using his own knowledge on the subject as his guide. Under such circumstances, it is commendable of the fertilizer agent that he sells as conscientiously as is the case. The grower who buys in this manner, however, deserves to be bitten sometimes. He may as well buy a pig in a bag with the hope of getting a good pig. If it happens to be tankage it may contain some pig at that.

There only are about one dozen materials commonly used in the manufacture of fertilizer, and three important plant foods, nitrogen, phosphoric acid and potash on which basis the value of these materials is determined. The grower should make it a point to learn all about each of these materials, and the different forms in which nitrogen, phosphoric acid and potash exist in each, then buy or make mixtures accordingly, or buy separately to suit the crop and soil. It is a fascinating study, and should yield big returns to the fruit grower. A few evenings with the bulletins of Prof. Harcourt, Mr. E. F. Palmer, and Dr. F. T. Shutt should provide the necessary information to study.

We shall have advanced another step in the use of fertilizers when all our fertilizer users learn to buy on the basis of analysis rather than on tonnage or brand names.

Other things being equal, a fertilizer containing double the amount of plant food is less costly to the purchaser per plant food unit both in actual money outlay and in handling, for he needs to apply only one-half the amount per acre to get the same results; then again, after he has learned to buy on analysis, he will buy with a definite result in mind after taking into consideration the character of crop and soil on which the fertilizer is to be applied; consequently more likely to achieve profitable results. This will allow him sometimes to dispense with paying good money for one or two plant foods which he may not need to secure the result in mind. This, in turn, will lessen fertilizer costs to the fruit grower in relation to results obtained, and increase his profits from the use of fertilizer.

Now, as to the Fertilizers Act. The present Act is comparatively new. It came into effect last August. When it was being made representatives of the manufacturers, fertilizer users and our agricultural chemists were consulted in committee. Mr. B. Leslie Emslie, of Oakville, represented the Ontario Fruit Growers' Association on the committee, and gave useful service. One main idea was kept in mind when the Act was being made, and that was to insure the purchaser of a fertilizer that the manufacturer or dealer would deliver him a fertilizer of at least the same analysis as that which he had bought. It is believed that the enforcement of the Act, as now constituted, will accomplish this, and that it will be the purchaser's fault, not the Government's, if a purchaser does not receive the protection that the Act affords. If he buys intelligently on the analysis basis he is comparatively sure of receiving it.

In section 2 a fertilizer is defined as a processed manure containing nitrogen, phosphoric acid or potash. It must contain one, two or three of these plant foods. By regulation certain materials are not considered fertilizer under the Act even though they contain plant food. These are barnyard manure and similar rough materials. They must not, however, be offered for sale subject to a guarantee of nitrogen, phosphoric acid or potash content. Then under section 5 the use of the term "fertilizer" is not permitted unless it contains at least twelve units of available plant food. Furthermore, the manufacturer is

not permitted to guarantee the nitrogen of a fertilizer unless there is present at least two per cent. in the case of phosphoric acid, at least five per cent. available phosphoric acid, and in the case of potash at least two per cent. potash soluble in water.

As a result of these provisions the lowest grade complete goods permitted for sale must contain at least two per cent. of nitrogen, eight per cent. of available phosphoric acid, and two per cent. of potash soluble in water. In reality all low grade fertilizer formerly sold is not permitted now for sale under the new law. Thus, the purchaser, whether or not he buys on analysis, is assured of at least twelve units of reasonably available plant food. Section 3 provides that all complete brands and most other kinds of fertilizer offered for sale in this country must first be registered with the Department. There are seven exceptions to this provision, namely, nitrate of soda, sulphate of ammonia, acid phosphate, basic slag, natural rock phosphate, sulphate of potash, and muriate of potash. It will be noted that most of these are materials used in the manufacture of fertilizer. They are only exempt from registration, however, provided they carry a certain percentage of minimum plant food, and are sold in a pure state, otherwise they must be registered. All complete goods must be registered as well as those not mentioned in the list that I have just given. The object of registration is to prevent the use of brand names that would tend to deceive or mislead the purchaser with respect to the analysis or the materials from which the fertilizer is made, and it provides the department which enforces the Act with a check on the guaranteed analysis which the manufacturer is required to state on each bag containing the fertilizer, or on a label attached thereto. Some 220 brands have already been registered under the new Act. Under the old Act there were 2,880. This will give some idea as to how low grade brands and brands which would be simply duplications of others have been reduced by the registration provisions of the present Act. Most of the brands registered so far are complete goods, and if used by the purchaser judiciously should give the result the manufacturer claims for them.

Section 4 of the Act is, of course, the most important from the fruit grower's viewpoint. Under this section the manufacturer or dealer is required to print a statement including the guaranteed analysis of the fertilizer on each bag of fertilizer which he delivers to the purchaser, or the statement may be printed on a label attached to the bag. This gives the purchaser the chance to compare the statement of analysis given by the agent when he bought the fertilizer, with the statement as provided by the manufacturer or dealer when the fertilizer is delivered. The guaranteed analysis as given in this statement by the manufacturer must also be precisely the same as that given in his application for registration of the brand in question. Consequently the Department is in a position to see to it that the statement of anlysis is a correct one, and that the brand in question has been registered, therefore permitted for sale.

There are some other features of the provisions of section 4 that should be understood. I will read the section, first.

4. (1) No person shall sell, offer, expose or hold for sale in Canada any fertilizer unless each package containing the fertilizer, or a tag or label durably attached thereto, is branded or marked on one side in printed characters in such form and manner as may be prescribed by regulation with the following information only:

(*a*) the name and address of the manufacturer or importer;
(*b*) brand name;
(*c*) registration number and designation of year of issue;
(*d*) guaranteed analysis stating separately in minimum percentages only—
  (i) water soluble nitrogen;
  (ii) total nitrogen;

(iii) available phosphoric acid;
(iv) total phosphoric acid;
(v) potash soluble in water;
(vi) in the case of basic slag or natural rock phosphate or a mixture of both, the fineness thereof;
(vii) whenever present in the fertilizer, the percentage by weight of leather, hoof, horn, hair, wool-waste, peat, garbage, tankage or any similar organic material, unless it has been treated in such a way as to make the nitrogen or potash or phosphoric acid therein available as determined by methods of analysis to be prescribed by regulation.

(2) Provided that when the fertilizer is sold in bulk and is not contained in packages, the prescribed information before mentioned in this section shall be stated on the invoice of sale.

It will be noted first that the bags or labels containing the printed information prescribed in this section, that is, the name of the manufacturer, brand name, registration number and guaranteed analysis, must not have any other information added to it. Consequently, under guaranteed analysis you may expect to find a statement only of the percentages of water soluble nitrogen, total nitrogen, available phosphoric acid, total phosphoric acid, and potash soluble in water, then, in the case of basic slag or natural rock phosphate, the fineness to which it is ground, or, if leather, hoof, horn or such inert materials form part of the ingredients of the fertilizer, and their nitrogen and phosphoric acid have not been reduced to reasonable availability, the percentages of such materials present must be stated also under guaranteed analysis. Such terms as "nitrogen equivalent to ammonia," "available nitrogen," "nitrogen as nitrate," "organic nitrogen" and the like are not permitted to be given in this statement of analysis. I wish to impress on you that only two forms of nitrogen may be given, namely, the percentage by weight of water soluble nitrogen and total nitrogen. You may find that when deliveries of fertilizer are made to you this spring, that water soluble nitrogen is omitted in the analysis. The percentage of total nitrogen alone is stated. When such is the case you may assume that there is little, if any, water soluble nitrogen present in the fertilizer, otherwise the manufacturer would have stated it; for, other things being equal, the water soluble nitrogen has greater commercial value than forms of nitrogen which are not soluble in water. Three forms of nitrogen chiefly comprise the water soluble group, and they are all considered to be reasonably available, with the nitrate form most available; then the ammoniacal and organic. The fruit grower should ascertain from the agent in which form the water soluble nitrogen is present in the fertilizer, and what percentage of the total nitrogen is water soluble. The phosphoric acid which must be stated in the analysis on the label is confined to two forms, the percentage of available phosphoric acid and the total.

To state it in any other manner is a violation of section 4 of the Act. In former days it has been stated as phosphate of lime, phosphate and phosphorus, but no longer does the law permit the public to be confused by the use of more than two terms, namely, available and total phosphoric acid, and the percentage of phosphoric stated must be based on phosphoric anhydride ($P_2O_5$), as in the case of nitrogen, when the percentage of available phosphoric acid is not given, but the total only, it infers that there is little, if any, available $P_2O_5$. present. The potash must be given in every case as potassium oxide ($K_2O$) soluble in water. The terms "actual potash," "potash as muriate" and the like, which were once used, are no longer permitted.

If it is basic slag or natural rock phosphate which you have purchased, it must be labelled in addition to its phosphoric acid content, with the percentage of fineness to which it is ground. It should be ground to at least 80% fineness to give the best results, and the fineness means the percentage which will pass through a sieve containing 10,000 openings of equal size per square inch. These

are the main features of section 4, and you should find it interesting to check its provisions with the statement of analysis which comes on the label attached to bags of fertilizer which you buy this year.

Another provision of the Act which protects the purchaser of fertilizer is one that prohibits the manufacturer from using fertilizer materials which contain sufficient poisonous constituents that would poison plant life when applied to the soil. This applies particularly to anhydrous borax, which is sometimes found in potash; and in cyanamide which when used too freely in complete goods or alone injures the germination of seeds.

I want to tell you something about the machinery employed by the Government to enforce the Fertilizers Act. We recognize first of all that the public interested in this law are the greatest factor in its enforcement. To protect the public our inspectors must have their best co-operation and support. The purchasing public of fertilizers is asked to apply for the services of Seed Branch inspectors who enforce the Fertilizers Act, and official analysts appointed under the Act, whenever it feels that the manufacturer has delivered fertilizer contrary to the provisions of the Act. A staff of official analysts and inspectors are provided by the Department throughout Canada, and the purchaser of a fertilizer may at any time take an official sample of a fertilizer and submit it to an official analyst, and receive in return a certificate of analysis which is accepted as evidence before a court; or, he may ask the inspector of his district to take an official sample of the fertilizer in order to check the veracity of the manufacturer's statement of analysis. We expect, however, that the purchaser in question will not ask this service from an inspector unless he has reason to believe the law has been violated; otherwise the cost of the service involved would be beyond reason. The following official analysts have been appointed under the Fertilizers Act in Ontario, and will receive samples for analysis at any time: Joslyn Rogers, Department of Chemistry, Toronto University; Prof. R. Harcourt, Ontario Agricultural College, Guelph; Prof. A. C. Neish, Queen's University, Kingston; and the Chief Analyst, Department of Health Laboratory, Ottawa. The analysts charge a fee of five dollars for each sample analyzed.

For inspection purposes the Province of Ontario is divided into two districts, the Eastern and Western. Roughly speaking the divisional line is the Grand Trunk Railway between Toronto and Sault Ste. Marie. In each district a district inspector is in charge of all the inspection work conducted therein. Mr. W. J. W. Lennox is the District Inspector for Western Ontario, with headquarters at 36 Adelaide Street East, Toronto, while Mr. T. G. Raynor, with headquarters at the Seed Branch, Ottawa, is the District Inspector for Eastern Ontario. I am sure that both these officers will be glad at any time to investigate and take the necessary action when notified by growers who have purchased fertilizer that they have reason to believe that the fertilizer delivered them does not comply with the provisions of the Act.

Q.—What do you mean by low grade? A.—Under the present Act the lowest grade fertilizer is 2-8-2; 2% nitrogen, 8% phosphoric acid, 2% potash soluble in water. That is not actually a low grade fertilizer when we compare it with fertilizers which were absolutely low grade and which were prepared to be sold under the old Act, but this is the lowest grade that may be operative under the present Act.

Q.—What preparation would you recommend? A.—Of course it would depend on the purpose for which it is used. I would say a high grade for potatoes on sandy land, 4-10-8.

Q.—What about clay soil? A.—On clay soil I would reduce the potash

and make it 4-10-4. I did not intend to go into that phase of it but that is my own personal opinion.

Q.—That would be phosphoric acid and potash? A.—Four per cent. nitrogen, not ammonia. We have had considerable trouble with some manufacturers during the past two weeks concerning the use of ammonia in the sale of fertilizers. Under the Act as it now stands the term "ammonia" must not be used in the statement of analysis which is supplied to the purchaser when the fertilizer is delivered. Some manufacturers have seen fit to use it in their advertising matter, knowing perfectly well that they could not use it when they delivered the fertilizer, and we believe it gave a wrong impression to the public because ammonia relativity to nitrogen is 17 as to 14 and it gives the impression that there is a larger percentage there than there actually is.

Q.—As a usual thing what is the soil most lacking in of these three? A.—Of course the one that is most likely to pass out is nitrogen.

Q.—Can bonemeal be used? A.—Bonemeal can be offered provided the available phosphoric acid content is high enough to insure 12%, but if the bonemeal contains 1% of nitrogen only, the manufacturer, under the law, would not be permitted to guarantee it.

Nitrate of soda must contain at least 15% of nitrogen to be sold without registration; if it contains 14% it must be registered. That same principle applies to nitrate of soda, sulphate of ammonia, acid phosphate, basic slag, natural rock phosphate, sulphate of potash, and muriate of potash. All other fertilizers must be registered.

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## THE GRADING AND PACKING OF OUR FRUITS.

R. W. Rees, Rochester, N.Y.

I want to say a few words first in regard to my personal impressions of your fruit show. One of the things which struck me at first was the size and extent of the show. For your first year's show I think you certainly had a wonderful lot of entries, indicating a good strong industry, and I am sure the visitor could not help but be impressed with the importance of the fruit industry in Canada. The next thing of importance was the fine quality, running as high as it did throughout the show; the quality was good as shows go, and for the most part excellent.

If I were to criticize the quality, it would be on the matter of condition. There were some lots in the show that were not in very prime condition either for exhibition or commercial purposes. That was due partly to seasonal conditions perhaps, to transportation conditions and possibly some others. That was more particularly true with exhibits from a distance than those from Ontario. This fruit had been held in common storage rather than cold storage. So condition, I think, is one of the things which might be improved.

In the matter of freedom from blemish the fruit as a whole ran very clean so far as fungus diseases or insect injuries were concerned. In some classes, the Baldwins particularly, there was a little russetting and a little bit higher percentage of fruit which was not quite up to standard on finish.

Colour, I think, for the most part was excellent. There were, of course, some individual cases where it was not up to the mark, but it was really surprising to me in going over the varieties to find the colour standard as high as it was. It was really very fine.

Another matter which impressed me was the list of varieties in box classes—

the fact that practically everything was of commercial value. In a great many shows you will find a much wider range of varieties than you had in this show, and a number of prizes for the other varieties which should not be encouraged. I think if there is one fault with our commercial apple industry, it is too many varieties, and I believe it is a function of your Winter Fair to encourage only varieties which are of commercial value in the Dominion, or new varieties of very promising commercial character, but there are a number of old varieties which have lost their place commercially that certainly should not be fostered, and I was glad to see the stand which the management had taken on this subject. They had a very much better list of varieties than one ordinarily finds in a show of that type.

I believe that your exhibitors were of varying degrees of experience. You had exhibits packed by some men who had had a considerable amount of experience in packing for exhibition purposes; you also had exhibits packed by men who were putting up their first exhibition packs. A man learns considerable about exhibits by going through the mill a few times, not only in the selection of the quality of fruit, but also in the packing. I want to say one word to the new exhibitors in regard to the selection of fruit for exhibition. It begins with growing the right kind of fruit for exhibition purposes. In the single box classes and for sweepstake boxes, it is very important to make a careful selection of fruit. Most of you know certain trees in your orchard which year after year give you a better formed, better coloured and finer textured fruit than the general run of trees of that same variety. In almost every orchard there are some trees which grow better exhibition apples than others, and for the single box classes and sweepstakes, we have to pick out early in the growing season the tree or trees from which we are going to get that fruit; see that that fruit is properly thinned so that it has a chance to colour well all around, and a chance for good development. In that thinning you will also do a considerable amount of culling because you will be removing defective fruits, and your best fruit will have a chance to develop up to its highest degree of perfection. Along with thinning, of course, comes the matter of proper spraying. I do not want to go into that broad subject, but in getting ready for a show begin in the orchard; grow the right stuff and you won't have very much trouble in putting out a high quality pack.

When it comes to the matter of packing for exhibition purposes it is important first to note the type of pack which is most desirable for certain sized apples. There were this year in the show some apples which were packed in three-two, where they were too large to pack properly in a three-two style of pack. They would have packed in two-two packs and have made a much more attractive package. It is rather hard to go into a discussion of packing here from the standpoint of sizes and styles; it is a matter upon which you can get information from your various inspectors, but the matter of proper style for proper sizes is one worth considering in the show.

It is always important to have a tight pack, that is a pack about as tight as you can get it without bruising. There are some tight packs which are due to a little lack of uniformity in size and colour, and the irregularity in the swell or bulge does not look attractive at all at a distance. You want to get a smooth, even, attractive, tight pack, and when you have that backed up by high quality stuff you stand a pretty good chance of coming into the money.

Another thing which I think goes without saying in an exhibition where you have as close competition as you had in this show, that it does not help very much to put the best apples on top of the package, because most of the boxes

are going to be seen pretty well to the bottom of the pack, and it is necessary to use good quality fruit from the bottom to the top. This year in going through several hundred boxes we found very little attempt at misrepresentation by over-facing, and in most of the cases where we did there were very few in number, and they were from exhibitors who had not had much experience in exhibition work. There were no cases of bad over-facing.

I believe the management of the show have it in mind that another year it will be a good idea in the permanent list to print a score card for plates and another for boxes by which that fruit is to be judged, showing the relative value in box work that will be placed on the fruit itself, taking into consideration such points as colour, size, freedom from blemish, condition, and the packing of that fruit. And I think in connection with that, a list can be made up as to what is the most desirable exhibition size for the different varieties. This would be of great value both to the exhibitor and to the judge; the exhibitor knows what is the ideal size, and the main points to be considered in judging the fruit, and it gives him a chance to work with some definite object in mind. It also gives the judge a chance to have a definite standard and measure all exhibits by that standard. Judging is pretty largely a matter of individual opinion. When a judge goes in he has his own idea of about what the ideal size for a variety is, its colour requirements and how much relative weight he should give to size and colour and freedom from blemish and condition and all of these things. The next year there may be another judge who is just as good a judge in every respect, but his personal opinion of the relative values is different, and it might throw decisions quite a little distance. The only way that can be unified and standardized is by a definite set of rules which will be followed whoever is doing the judging.

I have noticed that more particularly in the matter of size, particularly on plate displays. Take a variety like the McIntosh, which is primarily a dessert apple, one judge may judge that from the standpoint of high quality dessert apple where he wants very small, fine textured and high coloured and very smooth finish. Another judge may look at the McIntosh, and if he comes from the States he would think of it as an apple wanted on the markets of Boston or New York which ask for a comparatively large McIntosh, and he bases his whole judgment of size on the special demands of certain markets than on the general demand. Those are some of the things I want to leave with you for consideration on this subject.

Q.—Do you find judges vary greatly on their preference as to the style of pack? A.—There is quite a little variation, I think, among certain judges. In the three-two style of pack some sizes and some varieties pack up very much more readily on end with the stem end up than with the cheek up, and that is a question which has very often arisen in judging. This last season the judges were instructed not to differentiate on those two styles but give them equal value. That is a matter which should be made public to exhibitors before they place their exhibits, whether there is a preference for one style or the other.

Q.—What does the market say about these different styles of packs? A.—The market does not say a great deal on that subject. It is not as critical of the style of pack as whether or not that pack will carry through in good condition. A large proportion of the boxed apples are sold out of the boxes rather than the entire box to one customer. In a great many cases the purchaser does not see the box at all.

Q.—In your judgment which style of pack will carry best to long distant markets? A.—That is a little bit difficult to answer, but I would say for the

flat varieties like the Golden Russet, and our rather round varieties like the Baldwin, they will go on stem end in very good shape. The long-shaped varieties such as the Spitzenbergs will go on cheek better. It is a matter of shape of apple.

Q.—What relative value do you give fruit and pack? A.—In a general way they are putting about 60% on fruit and 40% on pack.

Q.—What are the qualities of the fruit itself that are considered? A.—There is colour, size, freedom from blemish, condition; then in some cases they use a separate score for uniformity. Personally I prefer not to have uniformity put on the score card, but to score that under the various headings of uniformity of colour, uniformity of size, etc.

Q.—Does condition include texture and finish? A.—Condition really would take into consideration, primarily the degree of ripeness or immaturity.

Q.—Then you give nothing for texture? A.—Texture is put in on a good many score cards. Texture and quality are sometimes put in on a score card, and they are real points in close decisions which are well worth while. I, however, often consider finish in connection with colour.

Q.—Then the next question is the relative value of these; put them in percentages? A.—If I had known that question was coming I would have figured that out in advance. Colour about 20%; size 15%; freedom from blemishes around 25%. Condition 20% to 25%. Whatever you have left would go under the head of texture, about 15%. I might revise that a little bit if I were to look it over and balance these up, but off-hand that would be somewhat approximate it.

Q.—That is 100% for quality? A.—Yes.

Q.—40% pack and 60% for quality, you would have to change the percentage? A.—Yes. In the case of the New England Show, they score on a basis of 1,000 points, and put 600 points on fruit and 400 on pack; it breaks away from any fractions.

Q.—In commercial graders, what do you prefer? A.—In my work with the Western New York Fruit Growers, who are operating a string of 40 packing houses through Western New York, in the last three years we have tried out quite a number of sizers of various kinds. All of our apples are sized in quarter-inch sizes—2¼, 2½, 2¾ and 3 inches. As to what is the best sizer is a problem that is entirely unsolved. We have not found any one yet entirely satisfactory.

The speaker then described a number of fruit grading machines in use in packing-houses.

When we first packed barrels in sizes, the trade was not prepared for it, but we have built up a very nice trade and go to two or three of the large chain stores which we can count on for two or three cars a week during the season. They insist that the 2¾ inch and 3 inch sizes be separated. Generally when a woman comes in to do her marketing, she picks out her apples herself; she does not leave that to the clerk, and if you have 2¾ inch and 3 inch apples in the same barrel, she picks out the three inch apples, and she paws around in the barrel to make sure there is nothing larger, and the damage to the fruit is quite material where they are raked over for every 25c. worth of apples. This year we put some 2¾ inch and 3 inch fruit in the same barrel, and the chain store would not give us within 50c. a barrel as much as they would for a carload packed 50% of 2¾ apples and 50% 3 inch apples, but in separate barrels.

Q.—Are the sizes packed mostly in barrels or boxes?. A.—Our packing is

entirely in round bushel baskets and in barrels. We have not gone into the box pack at all in our Association.

Q.—Do you find any bruising in the hampers? A.—We do get some bruising in the hampers. We use these primarily on Duchess and the early varieties; they are shipped out in car lots.

Q.—Not for long distances? A.—Yes, as far as Chicago, St. Louis, New York, Philadelphia. They pack within one layer of the top; then a cone-shaped top put down so as to give a good foundation.

Q.—A year or so ago your markets established a standard which they submitted to the Federal Government; was that passed on at all? A.—Never was passed on.

Q.—Your number of grades are confusing? A.—Yes, on our statute we have Fancy, A, B, C and Unclassified. The grades which most dealers are packing in Western New York are A and unclassified. The grades which the associations are packing are A and B: C grade is not used at all.

Q.—You handle the bushel package much faster than the box? A.—We handle that package much faster than the box pack.

Q.—Three bushels cost more than a barrel? A.—Bushels and barrels usually run very close together on price. You will buy bushels anywhere from $1.40 to $1.85 a dozen.

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## TRANSPORTATION RATES.

Geo. E. McIntosh, Fruit Commissioner, Ottawa.

I am going to ask the Chairman's permission to divide my time with Major Wheeler who is now our Transportation Specialist. I will only take a few moments in an introductory talk. The subject which has been allotted to me, Transportation Rates, is one which is receiving very wide attention throughout Canada, one which is attracting attention by almost every industry, and therefore, in order to talk in regard to it intelligently, it requires a very careful analysis of tariffs and regulations. It has been my privilege to go into the matter with Major Wheeler who has been recently appointed to the position of Freight Transportation Specialist for Canada; he has been attending your sessions and has been in conference with the gentlemen of the Transportation Committee of the Ontario Fruit Growers' Association and the Niagara Peninsula Fruit Growers' Association, and for this reason and because that committee will meet at noon, I ask the Chairman for the privilege of permitting Major Wheeler to present to the meeting in the way of a paper our opinion after having given the matter very careful consideration.

It has always been my policy since taking on transportation work on behalf of the fruit interests some 15 years ago, to endeavour to conduct that work fairly at all times with the railway and express companies, realizing that they had arguments just the same as we had arguments as fruit growers. That policy, I believe you will admit, has been fairly satisfactory. We have obtained in many instances concessions which have been of great benefit to the industry, and we have obtained those concessions by close co-operation with the carrying companies rather than by appeals to the Board of Railway Commissioners. That policy, I believe, is in the best interests of the fruit industry of Canada to-day.

As to the question of rates, the receipts of the railways have advanced 40%, the operating expenses of the railways have advanced 68%; the gross earnings

per mile of road have advanced 36%. In 1917, it cost a railway $71.71 to earn $100; in 1921, it cost $92.30 to earn $100; in 1922, the tide had turned, and it cost the railways $89.30 to earn $100. Now, the point simmers down to this; that from a transportation standpoint, that is the situation, and when that condition exists, you cannot reasonable expect that there is going to be a general revision downward on freight rates. When I say general revision I mean by one order of the Railway Commissioners, it would not be in the interests of Canada and it would not be in the interests of the fruit growing industry of Canada for this general fall of rate. If the transportation companies are not successful, the fruit industry cannot be successful. I doubt if there are any two industries more closely allied than the fruit industry and the transportation industry. Injure one and you injure the other, and I believe from the many conferences I have had with the railway officials that they appreciate that fact too.

In the last few years we have found a desire on the part of railway officials to confer, to obtain information and to do everything reasonably possible to assist the fruit growers.

When I say we cannot expect a general revision of rates, I do believe, however, that there are certain industries where consideration must be given, certain industries which are not in a prosperous condition, and which are being injured by the excessive railway rates. In such cases, I believe the railway officials will be prepared to receive a delegation and hear the facts and give a decision just as was done in the case of live stock, and in the case of potatoes. I believe from that standpoint that we as fruit growers are justified at the present time in going before the railway officials. I find that railway rates to-day from Ontario shipping points are 82.5% higher than they were in 1917. The situation is somewhat different in British Columbia, but I am not going to take up time now in referring to them.

In 1917, the wholesale price of Canadian fruits as a whole was 31% higher than in 1915; in 1919, 46% lower; in 1921, 38% lower. In other words, the price of fruit has fallen to 38% lower than it was in 1915, and carrying charges have advanced 82.5%. That is the situation and while that situation exists, from the standpoint of assistance to an industry that represents what the fruit industry represents to Canada—roughly I think around $150,000,000 have been invested—from that standpoint, I believe there is a sound reasonable case for approaching the Railway officials.

I do not think it is advisable to rush immediately before the Board of Railway Commissioners. My advice, briefly, would be to go into this matter carefully with Maj. Wheeler along with your committee and consider also the interests of other producing provinces, and arrange for an interview with the railway officials and discuss the matter in that way.

I want to refer to the condition of tender fruits in the Niagara Peninsula during the last season. In a co-operative way, arrangements were made whereby particular attention was given to the handling of fruits from the Niagara Peninsula. The result was approximately 5,000 cars of fruit moved out of that territory by freight, for the first time in the many years of my experience, and not one complaint came to Ottawa because of the shortage of cars, because of improper icing conditions or because of extreme delays in transit to the Western Provinces. I believe, Mr. Chairman, that the officials of these railways are to be commended and in this one instance they are deserving of a resolution of thanks. While we sat around these meetings and heard these matters discussed, we did not realize just what it meant to handle 147 carloads of tender fruit in one day

by refrigerator cars in that territory by one railway. We do not realize what it means to assemble cars; we do not realize what it means to supply 300 cars to a foreign railway in order to take care of our shipments, and that is what happened in that territory last season. (Applause).

The arrangements under which your fruit was handled in the Niagara District, were the nearest to perfection that we have yet had in Canada. In the past with the different types of refrigerator cars, we found it was almost impossible to handle successfully from Ontario, heavy producing sections, carload shipments which would reach any distant market in proper condition, for the reason that cars had to be iced at a distant point—sometimes Toronto, sometimes Hamilton—then taken into the territory to be loaded, and if the train was late, they never got back into Hamilton for re-icing, and the fruit went into the markets absolutely ruined and before getting very far from the shipping point. It was my privilege to take that matter up with the representatives of the railways and by co-operation there was established in that district last year, an ice-manufacturing plant, and everyone of the cars nearly was iced before it was placed, and re-iced before it left the territory, and for that reason your fruit arrived in the markets in a much better condition.

In regard to express rates, they have advanced 20% on fruit over pre-war conditions. Express rates on first-class merchandise have advanced 57 or 59 per cent. so that consideration has been given to the fruit interests. By way of comparison I might refer you to Saunders, New York, which is not very far from Niagara Falls; there the rates are $1.51, and in carloads $1.23, for a distance of 437 miles; while from St. Catharines, a typical point in the Niagara District, to Montreal, a distance of 407 miles, they were 95c. That shows the condition of your express rates as compared with the express rates from shipping points in New York State.

There are one or two matters that I would like placed before the meeting. As you are aware, there was a fruit conference held last year. At that conference, there were many recommendations passed regarding the amendments to the Fruit Marks Act. In accordance with these recommendations, and in view of the fact that the Fruit Marks Act and Part 9 of the Inspection and Sales Act had many amendments to it, it was thought advisable to bring down a new act consolidated, as it were. That Act has been before Parliament this session, and it has had its second reading. Within the past few days I had advice from Nova Scotia that a resolution was passed at the Nova Scotia Fruit Growers' Association recommending that the domestic grade should read "90% free from worm holes," instead of 80% free from worm holes. The New Brunswick Association have also expressed themselves as being favourable to some improvement being made in that regard. I want to leave that thought before you, and if this meeting feels like following along the same lines, I would appreciate an expression of it, because as I said before the bill has now had its second reading and will be printed almost any day, and for that reason I would like to know how the Ontario Fruit Growers' feel about it.

I wish to take this opportunity to congratulate the Ontario Growers' who participated in supplying fruit for the Imperial Show, and to congratulate them also on their success at the Winter Fair in Toronto. The fruit exhibit by the Province of Ontario was an outstanding feature at the Imperial Show; Ontario was the only Province to attempt an exhibit of that kind there this year. Advice reached me just yesterday that a slight change has been made in that the dates for the show for the coming year have been fixed for October 26th to November 3rd. I sincerely hope that Ontario will again be well represented there.

In closing I want to impress upon you, as a last thought, the necessity of close co-operation in the matter of transportation. I still feel that transportation is one of the big things to be considered in advancing the interests of the fruit growers of Canada. I have just returned from British Columbia, and I have been greatly impressed with the contention of their fruit growers that there has got to be co-operation, when I refer to this co-operation, I am not criticizing private interests, because we need some of them as well, but nobody who has been in British Columbia and has seen the conditions could help but be impressed with the absolute necessity for strong co-operation among the fruit growers, not only of that Province but of Canada as a whole.

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## SUGGESTIONS FOR DISCUSSION OF FREIGHT RATES ON FRUITS AND VEGETABLES.

Major R. L. Wheeler, Fruit Transportation Specialist, Fruit Branch, Ottawa.

In early war years when the railways sought increases in rates, they contended that rates should be based on what the respective commodities would bear, considered together with cost of service. They showed that increases in wages and material costs were increasing their operating expenses, and pointed out that general increases in prices made it easily possible for traffic to bear higher freight rates.

The spokesmen of the shippers almost unanimously repudiated and denounced the theory that rates should be based on what the traffic would bear, and that increase in prices afforded any justification for advancing the rates. They contended that rates should be based almost entirely on the cost of rendering transportation service. They contended that all a railway was entitled to earn was enough to pay its operating expenses and taxes and a fair return upon ts valuation, and that as long as it did this it had no legal or moral right to complain if its rates were not advanced when prices increased. On this basis the railways were denied any share in the general increases of the first war years, until when they obtained their first advance in the spring of 1917, the average wholesale price of all commodities had risen to 76 per cent. higher than 1913 prices. From 1917 onward the principle of basing rates on the cost of the service was strictly applied, and both railway rates and wholesale prices advanced rapidly, but not necessarily in step.

Following the 40 per cent. advance of 1920 came a rapid decline in prices, but not in railway operating costs, since there had been no downward revision in wages. The spokesmen of the shippers then reversed their attitude, claiming that the decline in prices, not being accompanied by any reduction in freight rates, had made the rates on many commodities relatively much higher than prices. They took the position, which was exactly the opposite of that which they had maintained for years, that the rates should be based on what the traffic would bear.

I have reviewed this situation to you because it has a close relation to your present attitude towards freight rates. If you decide to seek a reduction in the freight rates under which fruit and vegetables move let your application be free of any such inconsistency as I have outlined. If you openly ask the railways to handle your product at rates lower than operating costs plus their legitimate profit you are virtually admitting them to an interest in your profits.

Let us consider the causes of low prices to the producer of fruit and vege-

tables in the past season. Is it not the case that for a certain period each product found a wholesale price that represented a profit to producer and jobber after railway rates were paid? That was the period when the demand at least equalled the supply, or in other words when the supply controlled the market price. At that time the railway proportion was not unfair; I will venture to say that in the early marketing period of any season the wholesale price could "reasonably bear" a higher freight rate. Later there comes a time when the producer overloads every available market, in some seasons worse than others because weather conditions ripen the bulk of your crop within a week, then overloaded markets create a condition where railway rates are an unfair proportion of wholesale prices. I think though, that is a state of affairs from which you must excuse the railways any responsibility, since they may point out to you the possibility of so regulating the flow of your products to the markets that railway charges will never be an unfair proportion of wholesale prices. Just now we are discussing transportation, but I know you have under consideration every possibility for regulating the movement of your products as they ripen—dehydrating, canning and jam-making, together with pre-cooling and developing of new markets.

There is still a feature of the railway rates question well worth your consideration, and that is to ascertain if you can claim unreasonableness or discrimination in your rates as compared to other fruit-growing areas of Canada. You will notice that with a net increase in western class rates of 50 per cent. the commodity tariff under which British Columbia fruit and vegetables move to Vancouver market shows an average increase of only 45 per cent., and from various British Columbia points to various prairie points shows an increase of only 40 per cent., though the increase in third, fourth and fifth class rates to Winnipeg and Moose Jaw is exactly 50 per cent. On the other hand the purely eastern rates shown in a representative table of increases shows an increase of 82.5 per cent., though the increase in class tariffs is only 80 per cent. The lowest effective rate for Ontario fruit and vegetables is a specific commodity rate to Winnipeg, Portage and Brandon, which shows an increase of only 61 per cent. This rate became effective through an order of the Board of Railway Commissioners, and is one with which the railways are far from satisfied. The percentage of increase, lake and rail, on apples to Winnipeg is 72 per cent., dividing the above-mentioned 61 per cent. increase, and the 82.5 per cent. increase in purely eastern rates. The essence of all this is that fruit and vegetables in British Columbia are slightly favoured in their commodity tariff in comparison with class tariffs and the general increase, but this is evidently not the case in Ontario, where practically without exception fruit and vegetables move under class tariffs. I am sure though that if railway traffic officials are asked to explain this they will detail the construction of western rates on fruit and vegetables, and explain that the British Columbia product must be hauled a considerable distance to its markets, either to British Columbia or prairie points, while Ontario producing areas are in and adjacent to a more densely populated province and large markets. For some such reason it will be explained that British Columbia fruit and vegetables have always been favoured with commodity tariffs.

Presumably you are familiar with the evolution of rates that produced an increase of 80 per cent. in the east, but only 50 per cent. in the west. The first general increase of 15 per cent. in March 1918, worked a hardship on western producers, since there was no similar increase in the Western States, and our western producers were suffering in competition. Therefore, the 25 per cent.

increase in August the same year was additional in the east, but inclusive of the earlier increase in the west. Then from August 1918, to September 1920, western rates were only 25 per cent. advanced, while eastern rates were 43¾ per cent. advanced, developing with subsequent adjustments into the present 50 per cent. and 80 per cent. advances respectively.

One word about express rates. I am leaving with your Transportation Committee copies of all rate tables I have referred to, including tables of representative express rates which show that the average increase both east and west is almost exactly 20 per cent.

Following is a summary of a table of statistics other than those of freight rates:

Average freight receipts for Canadian railways, comparing 1922 with 1917, have advanced 40%; operating expenses per mile of road have advanced 68%; gross earnings per mile of road have advanced 36%; operating ratio advanced 25%, or in other words where in 1917, $100.00 operating revenue was earned with $71.70 operating expenses, in 1922 it took $89.30, though 1921 was $92.30 and 1920, $97.20. Into this table are inserted Canadian Pacific figures separately, it being conceded at various sittings of the Board of Railway Commissioners that they exemplify the greatest economy in Canadian railroading to-day, but they make practically no change other than in the lower operating ratio.

Another table shows that, comparing 1921 with 1917, salaries and wages advanced 91% on railways; locomotive fuel advanced 76% and railway ties advanced 99%. Operating expenses per mile of road were 84% higher in 1921 and in 1917.

One table of statistics from the Report of the Commission of Agricultural Enquiry, U.S.A., gives a subdivision of the wholesale prices of fruits and vegetables at principal eastern markets. This shows that the shipper received 59.64%; transportation, including 3% government transportation tax, 32.79%; miscellaneous handling costs 4.43%, and receiving distributors' gross profit 3.17%. This covers 6,237 cars over distances 400 to 3,000 miles.

I think the most interesting statistics are the wholesale prices of commodities with fruit and vegetables in detail, from December 1913 to 1922, as compiled for the Canadian Labour Gazette. These show that, compared with 1913, native fresh fruits advanced 33%, but foreign fruits advanced 125% and dried fruits advanced 92%; fresh vegetables dropped 16%, but canned vegetables advanced 53% over the same period. These figures are followed by tables giving the 1922 percentages of 1913 prices for each month from May to December. Dried fruits show an enviable stability, climbing slowly from 210.4% of 1890-1899 average, or 187.5% of 1913 prices in May to 224.5% or 192% of 1913 prices in December. Foreign fresh fruits were lowest in September at 207.3% or 203.6% of 1913 prices, and highest in July 241.2% or 236% of 1913 prices. But native fresh fruits were low in September, at 88.5% or 96.9% of 1913, August 114% or 117.6% of 1913, October 111.1% or 126.7% of 1913, although May was 376.8% of the 1890-1899 average, or 303.6% of 1913 prices. In vegetables, too, the canned article in these eight months ranges only from 136% to 158% of 1913 prices, while fresh vegetables were 93.6% in December, 98.1% in September, and 103.2% in November of 1913 prices, though May was 236.3%, July 173.5%, and August 150.2%.

The comparative stability of canned vegetables and dried fruits is easily understood, but surely only controlled marketing makes possible such stability in foreign fresh fruits, which in these eight months runs no higher than 241.2%

and no lower than 207.3%. Though this table of averages does not prove that every carload of imported fruit was marketed at a profit, it shows a satisfactorily high average each and every month, and proves that very little over-matured or low-grade fruit is allowed to reach the wholesaler.

The effect of increased labour costs shows clearly throughout all these tables wherever any labour is involved. Perhaps the higher prices of dried fruits or canned vegetables owe less to labour costs than to the stability of the article, but I have included an Animal Products table showing that hides and tallow at 135% were 71.4% of 1913 prices; leather at 169.2% was 111.8% of 1913; boots and shoes at 207.7% were 133.6% of 1913. Other high spots are—house furnishings 275.5%, or 215% of 1913; building materials 263.8% or 186.2% of 1913; fuel and lighting 265.4% or 232% of 1913. You are interested in these commodities, though you buy them instead of producing them. The price you pay provides for involved labour, they are marketable the year around, and they do not spoil in transit. Labour costs have just as big a share in keeping these requirements high as in keeping railway rates high, but in each case a price can be set which practically guarantees all production costs, while your perishables must be sold for what they will bring when they reach the market.

Tables of wholesale prices on Montreal, Ottawa and Toronto markets for September 1915 to 1922, give the low, high and average prices of pears, plums, peaches and barreled apples. With one exception the September 1922 average was an improvement over the 1915 figure, the totals showing 31 per cent. of improvement, but is only 54 per cent. of 1919 average and 62 per cent. of 1921 average for September. The spread between 1919 and 1922 on 11-quart basket of plums in Ottawa ($2.15 to 40c.) would exactly pay the carload freight proportion on 20 such baskets, Burlington to Ottawa (8¾ cents each). We are quite accustomed to hearing the old saying that figures cannot lie. These figures have shown a spread on the Ottawa market in three years of twenty times the freight charges on the article from its point of production, and venture to say a railway traffic official would ask no better figure to prove that railway rates exert practically no effect over wholesale prices of perishables.

However, the most favourable comparisons we have show only a 31 per cent. improvement in wholesale prices of fresh fruits since 1915, with a very rapid decline from 1919 and 1921 averages. Considering this, together with the increase of 82.5 per cent. in representative local rates it seems reasonably fair that the fruit growers of Ontario would be justified in approaching the railway companies for a more favourable adjustment of rates, and your representations would be strengthened with your financial statements which show, I know, a general loss in the industry.

Though in addressing you I have tried to produce both sides of the question, I want to assure you in closing that the Fruit Branch stands ready to give you any assistance in our power, and that if you decide to make an appeal for rate adjustments I will be glad to arrange an interview with representatives of the railways and give your Transportation Committee all possible assistance.

MR. FLETCHER: Can you give us the ratio of express rates?

MAJ. WHEELER: I was not expecting any criticism of the express rate increase which is remarkably low. Express rates increased 20 per cent. over the 1914 rate all around, and the freight rates are considerably greater.

MR. FLETCHER: The reason I ask that question is because a grower, for instance, shipping to Toronto, is charged for delivery by the Express Company and charged for delivery by the Commission House, and there should be a distinction between shipments that are delivered by the Express Company and

shipments that are merely shipped into the fruit market. The Railway Board have not made that distinction, I do not know why, but I do not think pressure has been brought to bear.

MAJ. WHEELER: The only distinction made is that a carload rate assumes your own delivery, and the L.C.L. rate compels company delivery, so if you ship forty baskets to Toronto, the Express Company would place it, but if you ship a carload, you ship at a lower rate and you deliver for yourself.

## REPORT OF NOMINATING COMMITTEE.

MR. FLETCHER: Your Nominating Committee taking into account the change made in the constitution recommends as follows:

That the following directors be elected from Divisions not now organized:

No. 1—Justus Jones, Prescott.

No. 9—H. S. Howell, St. George.

No. 10—Dr. Moore, Thornbury.

We find that the following divisions have organizations in affiliation with the Ontario Fruit Growers' Association as follows:

No. 2—Northumberland and Durham Apple Growers' Association.

No. 3—Clarkson Fruit Growers' Association.

No. 4—Burlington Fruit Growers' Association.

No. 5—Niagara District Fruit Growers' Association.

No. 6—Norfolk Fruit Growers' Association.

No. 7—Lambton Fruit Growers' Association.

No. 8—London and Caradoc Fruit Growers' Associations.

and further that these Associations be requested to appoint this year's directors before March 15th, 1923.

Moved by Mr. Fletcher, seconded by Mr. Winters that the report of the Nominating Committee be adopted. Carried.

## CERTIFICATION OF NURSERY STOCK.

E. F. PALMER, VINELAND STATION.

One of the difficulties encountered by the fruit grower is that of finding that many of his trees prove untrue to name. He feels that he has lost money when, after waiting several years for fruit trees to come into bearing, a percentage turn out to be untrue to name. Replacement of the trees by the nursery does not make up for the lost years.

The whole matter of incorrect naming of nursery stock has been considered of sufficient importance to warrant an attempt to draw up protective legislation. Unfortunately, however, it has seemed impossible to frame legislation which would give protection to the purchaser of nursery stock and which at the same time would be fair to the nursery business.

In an endeavour to solve the problem in another way, Dr. J. K. Shaw, of Massachusetts Agricultural College, has recently completed some investigational work on the identification of varieties of apples. Dr. Shaw has been able to demonstrate that apple varieties can be identified by leaf characters mainly, with a reasonable degree of certainty by an inspection during the growing season of the young trees in the nursery row. This method of identification has been put into effect in Massachusetts during the past two years. The plan as carried out there is as follows:

The Massachusetts Fruit Growers' Association offers certification of twelve leading varieties of apples to any nursery in the State, or of any trees to be purchased by growers or dealers in the State. On application to the Association a representative of the Experiment Station examines the trees, and if satisfied that they are true to name, a hole is drilled in a branch of the tree and an ordinary lead seal is inserted and sealed with a hand seal press. The seal bears the letters "M.F.G.A. 1922" (or any year in which the work is done) and on the reverse, "Certified to be Baldwin" or any other of the twelve varieties. The cost of work is paid by the applicant and has amounted to from two to three cents per tree.

In 1921 about 3,000 trees were examined of which a little less than 10% were found misnamed and refused certification. In 1922 a little less than 10,000 trees were examined and several hundred misnamed trees were eliminated from the nursery trade.

Of course so long as this plan is limited to Massachusetts, or any one State it does not solve the problem. The nursery trade is an interstate business. At the present time negotiations are pending for the certification next year of many thousands of trees in a nursery in another State, and other nurseries are inquiring about the scheme. The Massachusetts Fruit Growers' Association seems to be willing to sponsor this extension of the work as a temporary arrangement pending the time it may be taken over by a national organization.

During the past few weeks I have placed the above plan before the two largest nurseries in Ontario. Several reasonable objections to Dr. Shaw's plan of certification have been made and may be here stated.

1. The expense of certification, which must be passed on to the purchaser. There is not only the initial cost of certification, but other costs arising out of this certification. It is estimated that one-third of all the trees that would be certified would never reach the packing table, as no matter how experienced a nurseryman may be, there will always be a large quantity of trees unsold that eventually find their way to the brush heap, besides defective trees from various causes. The cost of certification of these would have to be borne by the stock sold.

Is the grower willing to pay the total costs of certification which may amount to 5 or 6 cents per tree? The opinion of nurserymen is that a small percentage only of fruit growers would avail themselves of purchasing certified stock, when other trees could be sold at considerably less cost. Ontario nurseries would thus be at a disadvantage in competition with imported stock.

2. Eighty-five per cent. of the nurseryman's business is in the small order business—the supplying of stock in small lots to purchasers, most of whom probably do not know one variety from another, and are not particularly interested so long as the tree lives and bears fruit. Unless uncertified as well as certified stock were kept, (which might prove burdensome), this 85% of the business, not interested in certification and not desiring it would have to pay just the same.

One point, however, is worthy of note. While only 15% of the nurseryman's total business is with the commercial grower, yet commercial growers take the bulk of the commercial varieties, and it is to commercial varieties only that certification would be extended in any case. The purchaser of stock, in small quantities, would not be affected to as great extent in increased cost of stock as would at first appear.

3. In apples, an experienced nurseryman can identify with certainty in the dormant stage, upwards of fifty apple varieties, including practically all of those

generally recommended. A careful nurseryman, who rogues his plantation, and who inspects stock before shipment, would have little or no stock going out untrue to name. Certification would add an unnecessary expense, and would deprive the careful nurseryman of the advantages of care and honesty, in meeting competition.

For the reasons just stated, I am personally of the opinion that for most commercial varieties of apples, and probably for some other kinds of fruits also, mixing need not occur in shipments leaving the nursery if reasonable precautions are taken. Such dormant identification depends of course, on the possession by a nursery of a percentage of experienced and permanent workmen, men who are interested in their work apart from purely monetary reasons. Such permanent, experienced, interested nursery employees are probably rare and especially so where nurseries are situated near cities. A permanent staff of workmen under such conditions is practically impossible.

4. The nurseryman at present contracts to replace stock proving untrue to name. If the plan of certification as outlined, proves inaccurate either in principle, or in practice through inefficiency, what agency would accept responsibility and guarantee replacement? In this connection, Dr. Shaw states that identification is practically certain, and that two weeks instruction to a man of ordinary ability is sufficient training to insure accuracy of work. A lifetime of nursery experience is not necessary.

An alternative to the certification of stock in the nursery row, and one which has no objections from the nurseryman's viewpoint, has been suggested. This alternative is that identification be carried out in the grower's orchard within a year or two after planting out, adjustment being made immediately between grower and nursery on the basis of this identification for any incorrectly named trees, replacement thus being made several years before bearing age.

There are objections to this plan also. Probably few growers would apply for certification. The expense would be considerable owing to the necessity of visiting orchards in various parts of the Province. The certification is primarily for the grower's benefit,but it is doubtful if he would feel inclined to pay these costs unless he were setting out a fairly large acreage, with therefore, sufficient at stake to justify the expense. The Department might bear the expense, but such an arrangement is naturally open to question. Viewed in one way it might be justified. As previously stated, certification would only be extended to a small recommended list of varieties. As a Province we are at a disadvantage in having far too many varieties of apples. If a select, carefully drawn up list were certified before planting out, and sold to growers by the nurseries at the usual cost, exclusive of cost of certification, there should be a strong tendency on the part of growers to plant to these certified varieties only. The planting of other varieties would be discouraged, a condition of advantage and benefit to the Province generally.

There is this further to be said for the Government bearing the cost of certification. There would be no hardship to the nurseryman in having certification carried out in the nursery. The work could therefore, be concentrated in a relatively small area with considerably reduced expense. Moreover, the total stock of the recommended varieties could be certified, instead of a small percentage here and there over the Province where growers had applied for certification.

One source of nursery stock could not be taken care of—imported stock,

mainly from the United States. It might be possible to have dormant inspection of this by a competent nurseryman, appointed for the purpose.

Thus far in this paper reference has been mainly to apples. The problem of nursery stock untrue to name, is, however, equally as serious with other fruits. It is only with apples though, that investigational work has been carried to the point where identification from leaf characters has been shown to be possible and practicable. For the Niagara District peaches in particular, present a very serious problem. An experienced nurseryman can identify a considerable number of apple varieties in the dormant state. With peaches, however, this dormant identification is not possible to any reasonable extent. It is hoped that a study of leaf characters may show some certain means of identification for peaches and also other fruits other than the apple.

It is for this convention of fruit growers to state its views on the importance of the question brought up in this paper, and, if it thinks advisable, initiate a movement to have immediate certification of apple varieties, (possibly only in an experimental way at first) and to have investigational work carried on with other fruits with a view to future certification of such fruits. It would be of undoubted value to have sufficient certification carried out with apples in 1923 to determine roughly the percentage of incorrectly named stock which is being disseminated. In Massachusetts about 10 per cent. of stock was found to be untrue to name. If this percentage in Ontario were found to be negligible nothing further need be done. If it were considerable, certification could be extended.

Q.—Would not it be advisable to certify varieties of peaches, pears and plums? A.—We cannot certify anything but apples at the present time, because there is no means of identification.

If you as growers are not interested in getting varieties true to name, let us drop the subject, but if you think the thing is worth while, let us discuss it and get to the point where we can make some definite recommendations so that we can get some action.

Mr. Roberston: This matter came up some years ago, and there was quite a little bit of discussion. At that time there were quite a number of nurserymen here, and the discussion became quite heated.

It used to be the custom in some nurseries if they had not the variety asked for, they gave the next best thing, and there has been a lot of damage done. There has been a laxity all along the line both in the budding stocks and everything else. With fruits that bear in a year or two, it is not a serious matter, but with other fruits, which take ten years to mature, we suffer severely. We tried to make some recommendations there, but it is like recommending and showing a man how to pack his fruits; if he is not straight and honest, he does not make any attempt. You have to make some rules so that he won't have a chance to be dishonest. I do not know what recommendations we should make, but this is a thing that should be taken into consideration and discussed. As to how to make a man honest who is crooked, we will have to get the Act settled first.

Mr. Hodgetts: I think on two different occasions this Association has made recommendations in reference to the Nursery Control Bill. On the first occasion, a committee was appointed to meet with the nurserymen and discuss the matter and draft an Act. It was brought before the Association the following year and it was found not workable. The matter was dropped until three years ago, where Mr. Bragg brought in a new Act which was presented to this Association and to the House. It was printed by the Ontario Government and

dropped for that session with a recommendation by the Agricultural Committee of the House that a committee of Nurserymen and representatives of the Ontario Fruit Growers' Association would consider the matter to see if they could make it workable. We held several meetings, finally drafting an Act which we published so that it could be discussed by the different parties interested, but we found we could not get a workable Act to make men responsible. That last Act is now in abeyance, and I doubt whether it will be resurrected. The nurserymen did their part to make it workable, but it seems almost impossible to get any legislation to overcome this trouble. We went through the legislation on the books of the States of the Union, on bonding salesman and everything under the sun, but there was no perfect Act over there, so we gave it up as hopeless.

Prof. Macoun: We have been studying identification of apple varieties for the last three seasons, and I feel confident that the well-known varieties can be identified quite well by their leaf when the trees are young. Every fruit grower knows that he can, at a distance, recognize a Ben Davis apple tree from a Wealthy or a Duchess, or practically any variety of apple tree; he can tell it one hundred yards away, and I think if these fruit growers would look more closely at the foliage of their young trees, they could identify these trees just as readily when the trees are young as they can when they are bearing fruit. We have made application to the Federal Government this year for a certain amount from our estimates to employ a man who would become an expert in this line and who would go out to young orchards at the request of the fruit grower and pick out the trees that were not true to name. It seems to me, in an orchard that has been planted a year or two or even three years, a nurseryman would be only too glad to replace any trees that were found not true to name. I think that would be a great step in advance. It would still be a greater step in advance if the trees could be certified in the nursery and seals put on them as they are doing in Massachusetts. We feel that this is a feasible scheme and Dr. Shaw has proven it to be so in Massachusetts, and I hope some action will be taken by this Association along this line.

Mr. Paul Fisher, Burlington: It is not alone with regard to apples that we have troubles. In 1912, we bought 1,000 cherry trees that were supposed to be Morellos; there were 800 Morellos in the lot, 100 Early Richmonds, and about 100 other varieties that were totally useless. The following year we bought 200 Monarch plum trees; 120 of them turned out to be Green Gages. In 1916, we bought 500 pear trees, intended to be Bartletts, and about 15% were Boscs. These are instances in which we have bought stock and been stung in a large way. We have, of course, been stung many times in a smaller way. I consider it is much more necessary that these other lines of fruit should be certified than the apples, because even if you did find that your apple trees were not right at the end of seven or eight or ten years, you could graft; but you cannot do that with a cherry tree, nor a plum, nor a pear tree; it is a total loss, and they are much harder to tell in many cases. In fact, I feel very confident that I could tell any standard variety of apple tree in dormant state, but I cannot do that with cherry, plum and pear trees. We need more protection in these cases than with the apple.

Mr. Palmer: I would like to point out in that connection that there are no means of identification of any fruit but the apple, and one point I am trying to make is that support should be tendered other investigational work which would determine whether these varieties of pears, plums and so on might not be identified in the same way. In the second place, a great deal of the mixing

which occurs in the nurseries is probably unavoidable. That is, it is human weakness, the mixing of the scions.

MAJ. ARMAND SMITH: I think possibly a word ought to be said from the point of view of the nurseryman. No doubt there are nurserymen who are not as honest as they should be. Possibly it would be best then to only deal with the nurserymen who have a reputation to uphold, I hardly think any nurseryman who is jealous of his reputation would deliberately give stock untrue to name. It costs too much money to replace it, and it hurts his reputation too much. That is one thing a good nurseryman does not want to do.

This discussion of Mr. Palmer's is very interesting, but it has come out of the blue as it were, and we have not gone into it very thoroughly. It has aspects that I would think would be of great benefit to nurserymen and fruit growers if proper co-operation could be brought between them.

I would like to ask Mr. Palmer several questions: In the first place, will the grower pay for the extra cost of labelling these trees? There is another cost besides putting the labels on the trees. We often have a block of 10,000 Spies, and 5,000 only are sold; the balance would have to be burnt. There would be the cost of labelling the extra 5,000 Spies, so that that cost would have to be added to the cost of the trees sold to the grower.

I presume none of the growers want to do away with Canadian nurserymen, and they would want to give us a fair deal with American concerns, but if we were forced to label all of the trees, would the growers buy American stock which would be considerably cheaper than our Canadian stock which was registered?

In the third place, would Mr. Palmer's men be thoroughly reliable? They might go through a block of apples, and if they were not sure, they would want to err on the side of safety and might throw out half a block of Spies, whereas in reality, those Spies might be all right. But the nurseryman would have to burn those trees.

I think it is a good thing to get started on this and to have a discussion, and if there is anything we can do, we will be delighted to co-operate in every way possible.

The following committee was appointed to take up the matter with the Government with power to act: Mr. Paul Fisher, Convener; Mr. E. P. Palmer, Maj. Armand Smith, Mr. W. T. Macoun, Mr. W. H. Gibson.

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## FRUIT COLD STORAGE AT BRIGHTON.

ANDREW FULTON, BRIGHTON.

The Government Cold Storage, Brighton, has amply demonstrated to the fruit growers, that fruit will hold up in excellent condition if properly handled from the orchard to the cold room.

COLD STORAGE TEACHINGS: During two years that the cold storage has been in operation we have derived some very simple, common-sense conclusions. The following are some of the lessons that cold storage has taught the growers to observe for successful storing:

(1) That cold storage will not adopt itself to the grower's ways, but the grower must adopt himself to the requirements of cold storage.

The importance of this statement is that successful cold storage of orchard products is based on the grower, forgetting the old methods of storing fruit and adopting the new. This means that our whole system of handling fruit must be changed, otherwise cold storage will be a profitless investment.

(2) Cold storage has shown the great necessity for more thorough spraying of the orchards. As growers of fruit, you have got to take your coats off and get down to actual work in the orchards, and be on the job the entire spraying season. The time has arrived to quit blaming the hired help, faulty spraying machines, or the material that is recommended. It is just human nature that the one to take the most interest in the orchard is the "grower."

It is needless to mention that cold storage is not a place for scabby and wormy apples, but it is most disheartening to witness the amount of low grade fruit that is sent forward to the various cold storages in the country. The Government Cold Storage has received its quota of poor stuff as the following figures will show: 1921-22, 68.5 per cent. No. 3; 1922-23, 64.0 per cent. No. 3.

If these figures represent the quality of fruit produced along the north shore of Lake Ontario, it is time that drastic measures were taken by the growers to improve the situation, otherwise quit the business.

(3) The time has arrived that greater emphasis must be made on the more urgent need of careful handling of fruit. It must be admitted that the picking season is a busy one, and that experienced orchard help is scarce, but there is no excuse for the excessive bruising of our fruits during the picking and packing operations. Careful handling must start in the orchards and packing houses, then the grower will have a good argument with which to get after and insist on the Transportation Companies to exercise greater care, and avoid the great loss that is experienced each year from this source.

The fruit industry in the past has lacked proper supervision. Our motto should be, "Handle the same as Eggs."

To bring out this point more clearly, our cold storage has shown that bruised fruit is the start of a great deal of our rots. Bruises on certain varieties will take on a sunken appearance and remain hard deformities, such as most of the winter apples, while the fall kinds will turn soft and rot at the bruised areas. A No. 1 apple after it is bruised can no longer be termed a No. 1, as there is so much waste in the fruit.

(4) The stage of maturity of fruit at picking time is very important to the keeping quality of our orchard products in cold storage. All fruits, especially apples, should be well matured, not ripe, at the time of picking. Maturity is indicated by the fruit being well coloured for the variety. That is, for red varieties that are not colouring up the best, the back-ground is used as an indication, which should be just turning yellow.

To explain the importance of maturity, let us consider an apple as it develops on the tree up to the time of picking. There are certain well defined changes taking place. The most obvious ones are the increase in size, and an increase in the colouring of the fruit. Associated with these changes is the decrease of acidity and the increase of sugars.

The most important of these changes from the cold storage viewpoint, are the changes that occur in the skin of the fruit. During the apple's growth on the tree there are certain small openings or pores through the skin that are used for breathing and moisture purposes. As the fruit approaches maturity these pores or lenticals become sealed over, which leaves the skin in a waxy condition. Consequently, when the apple is matured and ready for picking, the skin is practically an impermeable coating. This waxy covering will only allow moisture to pass through very slowly. The waxing of the skin is correlated with proper colour development.

It has been observed at the Brighton Cold Storage, that red varieties such as Wealthy, Snow, and MacIntosh, which are only 50 per cent. coloured, the

remainder of the fruit green, will wilt very badly on the green side, while the red or blushed side is quite firm and crisp.

Apple scald is another trouble experienced in cold storage caused through the storing of immature fruit. The green side of the fruit always scald first and in bad cases, spreads over the entire apple. Our experience has been that certain varieties are attacked more than others. Such varieties as Stark, Bethel, Baldwin and Mann have been affected the worse.

The importance of maturity cannot be over estimated, which means that each grower should study his own fruit and his own conditions in order to determine the proper picking stage. It is quite obvious from what has been stated that fall varieties of apples should have, at least, two or three pickings to obtain an even maturity and ideal keeping qualities.

(5) The prompt storage of fruit after picking plays an important role in the keeping qualities of fruit. There is a marked difference in the condition between fruit stored promptly after picking, say, not more than two days later, and otherwise comparable lots of which the storage is delayed ten days or more. Such delay is especially injurious during a period of warm, humid weather. The delayed fruit at withdrawal from storage is riper, yellower, and duller than the corresponding "immediate" stored fruit, and in addition develops more serious scald and decay.

Summarizing the importance of prompt storage, there is only one place for a grower's cold storage and that is at the point of production.

From what has been stated the grower must readjust himself to the conditions as they are presented. With the advancement in horticultural science one is apt to look to this source for the solution of his problems. This is quite right, especially as our problems are so numerous, but at the same time if the common every day orchard practices are going to be cast aside, the fundament which science teaches us is going to be neglected.

Q.—Does the scab develop after the fruit is put in cold storage? A.—So far it has not. Q.—You have made experiments to show that? A.—Yes; we will get a white or pink mould, but scab will not develop.

Q.—Will it extend? A.—It will not extend if held at the right temperature. If you hold apples away on in June, you may have some spreading, but our experience is we have very little spreading.

THE CHAIRMAN: I had occasion to be in Montreal and I visited one of the brokers; he had just had some Spies shipped in from the Brighton Cold Storage. They were crisp and fine, and as nice as anything you could wish to see, and he made the remark, "The apples from Brighton have been so satisfactory to us at the present time."

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## REPORT OF THE RESOLUTIONS COMMITTEE

The report was presented by W. H. Gibson, Chairman:

1. We recommend that this Association urge upon the Departments of Agriculture, both Provincial and Dominion, the necessity of more educational work for the fruit industry, and especially through the fruit inspectors, and not only in the packing of fruit, but also advice on the proper pruning, spraying and general care of the orchards.—Carried.

2. That we reaffirm the position taken at the last Annual Meeting of the Ontario Fruit Growers' Association with regard to the need of a suitable Testing Station at which all promising new varieties of apples or newly created apple seedlings may be tested under careful supervision in an apple growing district,

and that we recommend that such a station could be most suitably located in the Lake Ontario Apple District, east of Toronto.—Carried.

3. We recommend that the following Standing Committee of the Ontario Fruit Growers' Association be appointed on tariffs and taxation: Convener, Jas. E. Johnson, W. A. Fraser, and W. F. Fisher, with special reference at the present time to having exemptions from duty granted on fruit and vegetable grading machinery, and also adjustments to the Sales Tax on fruit packages, spraying and dusting materials.—Carried.

4. This is a resolution forwarded from the Ontario Horticultural Association with the idea that this Association should also act on it:

Whereas in view of the increasing interest in the culture of nut trees as food producing and ornamental trees, and of the great increase in the volume and value of nuts imported into Canada for domestic consumption, we would suggest that a competent man be appointed to investigate the nut-producing possibilities of Canada with a view to determining the most suitable species for the various sections of our country and encouraging the wider planting of the best hardy and exotic species.—Carried.

5. That the Highways Department of Ontario be urged to use fruit and nut trees along the new Queenston Highways from Hamilton to Niagara River in place of the forest trees at present being planted along other roads in the Province.—Carried.

6. That a hearty vote of thanks be tendered by the Fruit Growers assembled in convention, to the carriers, that is the railways, for the successful efforts made by them to handle the heavy crop of fruit during the year 1922.—Carried.

7. In past years a number of resolutions have been passed by this Association and have been lost sight of. It is recommended that the following committee be appointed to follow up these and any other resolutions that may be passed by this Association at this Convention: W. H. Gibson, Chairman; W. J. Bragg, M.P.P., C. W. Baxter, H. Sirett, J. E. Johnson.

Mr. W. F. Fisher: It has been suggested that the number on the executive of the Royal Agricultural Winter Fair be increased. As it stands now, there are only five, and it is quite probable that that number will be increased. In view of that I would suggest, in case this is done, that we request that Board to give the fruit and vegetable growers one representative. The executive is made up of representatives of certain sections in various branches of agriculture, and I would move: "That this Association recommend that one representative from the fruit and vegetable growers be appointed to the executive of the Royal Winter Fair."

Q.—What about the Beekeepers? A.—I will leave that with the Beekeepers.

The motion, seconded by Mr. Atkin, Bronte, was carried.

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## THE RELATION OF THE CANNED AND DRIED FRUIT INDUSTRY TO THE FRUIT AND VEGETABLE GROWER.

C. S. McGillivray, Chief Canning Inspector, Department of Agriculture, Ottawa.

There is not a man in my hearing who does not know that there are many varieties of fruits grown to-day which are absolutely valueless except to look at on the tree. Every fruit grower knows full well which fruits suit his own taste and which ones do not. He knows equally well that if a certain variety

of fruit in its prime, fresh condition is not desirable for food for himself that there is little chance for it to meet favour with other people regardless of how it is prepared.

Marketing means buying and selling. There may be a dozen or more parties participating in the marketing of any line of produce, but there are only two principals. Before any article can be marketed there must be a Producer and a Consumer. Without both of these no business can be done.

The first record we have in direct marketing was when Jacob sold his pottage to Esau. Later we find the principle of indirect marketing or the plan of conservation and distribution being introduced when Joseph wisely profited by a direct tip on the Egyptian Corn Market.

However, the problem which is confronting you to-day is how you are best going to feed to the consuming public the increased amount of fruits which you are producing.

When the fruit growing industry was in its infancy the grower could dispose of his crop direct to the consumer and it did not take much to glut the market. As the orchards began to yield greater crops than the local demand required, the grower had to call in the distributor to find new markets and modern methods of distribution and collection.

The distributor has answered to the call and large packing houses, pre-coolers, refrigerator cars, etc., have been provided while a staff of the most expert men available have been obtained to place the product of your orchards, as far as possible, on every market of this land as well as on the markets of other lands.

Still you find that you are having a surplus, still you find that the increased production is far outstripping the increased demand, and you are getting alarmed for the future. You have outgrown your marketing facilities.

I need not remind you that there are only two ways in which your crop can be marketed, either in the fresh state or in some preserved condition such as canned fruits, dried fruits or jams. Other large fruit growing countries have passed through the same difficulties. You can profit by their experience.

For instance, it is only a few years ago since California, acknowledged to be the greatest fruit state in the world, was in the same position which you are now. What did they do? They decided that they would have to give canning and evaporating an equal place in the sun with fresh fruit packing. What is the result? Statistics show that in 1921 over 80% of all the fruit grown in California (except citrus fruits) were either canned or evaporated. Washington and Oregon tell similar stories.

I am not going to say much about the canned fruit industry as it has been obtained in Canada in the past. There are some features about it which we would be glad to forget. I will say, however, that the canners of Canada have packed sufficient high grade fruits to demonstrate that the highest quality can be packed here in Canada, if they can get the right kind of raw material from which to pack.

As far as the dried or evaporated product is concerned, the Government's efforts have been directed almost entirely to apples, and we are glad to say that the standard of Canadian evaporated apples has been raised out of the pit, where it was fifteen years ago, to the equal of the best in the world to-day.

In the past the bulk of your fruit has been distributed in the fresh state. You have outgrown the conditions which made this distribution possible. Surely you are wise enough to see that any attempt to market any considerable crop of fruit in its fresh state over the vast, thinly populated parts of our country

during the short season of prime, fresh condition, is an absolute impossibility. Surely you must know that there are millions of people in Canada who never get the opportunity or possibly the price to buy a pound of your fresh fruit. Surely you will agree with me that the attempt to distribute your crop in this way is not good marketing.

Suppose you turn to the conservation of your fruit, what relief can you expect to get from that source? The canner can take a large portion of your crop, but it is essential that he get the very best quality possible to produce, otherwise he cannot pack a quality of goods to meet competition with the U.S.A. The canner can take some of your poorer quality of fruit for his cheaper grades but without the higher grades he cannot sell his cheaper ones.

The dried fruit industry can be developed to take care of the needs of our own people, but it cannot be built up on culls nor on bumper crops alone.

The jam and jelly industry can take care of a great amount of fruit, but they will expect to get a certain percentage of your crop at a fair price each year, regardless of whether the fresh fruit market goes up and down.

Statistics are generally dry reading, but every time I compare the statistics concerning the home manufacturing of canned and dried fruits with the imports of similar fruits from the United States I get disgusted with our Canadian system of marketing. Can you explain to me why that in 1918, the total value of our Canadian peach pack was only $113,944, while during the same period we imported from the U.S. $226,870 worth of dried peaches and $183,310 worth of canned peaches, a total of $413,180, or over three and a half times as much as we manufactured? In 1919, we imported $862,257 worth and in 1920, $932,124 worth. Nor were peaches the only fruits which we grow ourselves and which we imported more than we packed. Why is it that out of about $1,000,000 worth of canned pears packed in Canada in 1920 about 75% were packed from fruit grown in Washington and New York? Why is it that a large percentage of our jam is made from fruits imported from other countries? Why did a certain manufacturer in Canada find it either necessary or profitable to import, during the month of November last, considerably over a million pounds of dried apple pomace, the dried product of about 315 carloads of cider apples with the cider removed and the residue dried?

Particular interest is attached to this as it is used to make a perfectly good food product, which may be bought in almost any store in any town or city in Canada, United States or Great Britain. This product is used by the jam maker and the housewife, and one pound of it in jam or jelly making will replace three pounds of fresh fruit.

Did anyone ever have the nerve to tell you that the distribution of any excessive amount of fruit in its fresh state is economic waste? If you have never been told this before I tell it to you now and I stand ready to defend my statement anywhere.

Do you realize that your highest quality of fruit can be placed on the table of 75% of the people of Canada at a cheaper price to them than they are paying for an inferior quality of fresh fruit.

Both Federal and Provincial Governments have done everything in their power to help the growing and marketing of fresh fruits. If there is anything left undone it must be for the reason that it has never been thought of. I have not heard of anything progressive being done by any of the Provincial Governments to aid the canning, evaporating or jam trade.

The Federal Government may take credit for making the evaporated apple industry what it is. We are glad to say that Canada has a place of her own in

the marketing of evaporated apples. When the British Ministry of Food called for 1,500,000 pounds of evaporated apples from America, Canada was able to secure 1,120,000 pounds of the order and at an average of one-quarter of a cent per pound in advance over the U.S. for similar quality.

The Federal Government has foreseen for some time the possibility, as well as the necessity, for building up the canning industry in Canada. They have made a careful survey of the territory, have investigated the methods followed in Canada as well as those followed in the U.S.A. They have conducted experiments and carried on considerable educational work with both manufacturer and wholesaler.

Government standards of quality and quantity have been established. Standards which, we are glad to say, are acknowledged by other countries to be the most practical in the world.

There are four legally defined grades of canned foods: Fancy Quality, Choice Quality, Standard Quality, Second Quality. Each grade or quality has a place of its own in the housewife's larder. These grades or qualities are plainly marked on the label.

The packer has commenced to find out that he is no longer selling labels; he is selling foods. He is finding out that the label is not just a wrapper for the can, but that it must tell the truth about the contents of the can and tell that truth in a legally defined language.

The standards are so simple and so practical that any honest, intelligent person can pack to them. If the packer is not honest he will have to be driven out of the business; if he is not intelligent, he will have to make room for one who is.

Do not countenance any rivalry between the fresh fruit distributor and the canner and drier. It is your fruit that they are all trying to market, and it is the same consumer that they are striving to feed, but each in his own way. There was never a time when co-operation was in greater demand, nor do I think that there was ever a time when the foundation for co-operative marketing was better laid.

It seems to me that with the assistance of the Commercial Intelligence Bureau, the weekly crop reports, the market reports and the transportation assistance rendered by the Government, that you, through your growers' organizations, should be able to apportion your crop through the various channels referred to herein, that there should be the greatest delivery and the least possible loss between the grower and the consumer.

Let us hope that you will feed Canadians on Canadian fruits and not feed them on fruits 75% of which have their origin in other countries.

With active co-operation between the grower, the fresh fruit distributor, the canner and dehydrator and the consumer, the fruit trade in Canada should be at least doubled in five years.

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## VARIETIES OF FRUIT FOR PLANTING.

### The Dealer's Viewpoint.

Chas. Dawson, Dawson Elliott Company, Toronto.

In speaking of the varieties of fruits for planting from the dealer's viewpoint; I would suggest in strawberries, Parsons, first, and then the Glen Mary. The majority of people neglect to get a good package to put strawberries in for market, and that is the principal thing for marketing and shipping. Strawberries should be fully ripened before they are picked and packed. It is a good idea to have a

cold storage at most shipping points and have the fruit pre-cooled. From our experience, the fruit from the South will keep two or three days after it lands even better than our own local fruit that only comes a few miles. I think the Government would be wise in helping growers to establish cold storages at shipping points.

For raspberries I would suggest Cuthbert, which is really the only variety there is, although the King is very good. Black caps supply the best sale on our Toronto market.

Red currants are very profitable, too, and the cherry is one of the best kinds. In gooseberries, of course, the larger the variety the better price you get. I would advise the Downing. In cherries we have the Richmond, the Montmorency; and the Morellos are very promising. Since we have had prohibition the Jews are great for buying Morellos to make cherry brandy.

Plums: We have many varieties of plums. I think the growers are foolish to grow Abundance and a lot of other early varieties. Some of the largest ones come on the market and command a fair price. The consumers buy them and put them up, and there is nothing worth while about them. They are often sold for Lombards as they resemble them in colour, but they are a disappointment to the consumer, and by the time the good plums come in the consumers do not care to buy any more. I would advise growing the later kinds, and I would cut out some of the early Japanese varieties. The Shropshire Damson is one of the best varieties to grow.

Pears: The Bartlett is about the best pear to raise, although there is the Anjou which if it had proper cold storage would be all right for winter consumption instead of the American pears.

The apple is the king of all fruits. I think if we had stayed with a lot of our old varieties instead of some of the new ones it would have been better for us. For the early varieties I would suggest the Astrachan, then the Duchess, the Wealthy and the Peerless. I bought a lot of Snows from the Government Cold Storage at Brighton, and I think they are as nice and have as good flavour as one would wish for, and they can be kept until any time desired. Those apples have been up at our warehouse a month and they command about $7.00 and $8.00 a barrel. The great thing in handling fruit is getting it into cold storage at the proper time. They should be put in the day they are picked, if possible. Spies always command a price even in a year like this when apples have been a glut.

Peaches: There are a lot of early varieties of peaches that spoil the market, yet command a better price than the better varieties that come in later like the Fitzgerald, St. John, Reeves and Crawford. I think the growers are overdoing the Elbertas.

Q.—Does the Rochester give satisfaction? A.—Very good, but if we get favourable weather the St. John is one of the best peaches we can grow.

Q.—In regard to apples, does the McIntosh compare with the Snow? A.—I think we can produce McIntoshes and Jonathans as well in Ontario as any place in the world. This year we brought in ten or twelve cars of British Columbia apples and ten or twelve cars of American apples, but I think Ontario can produce the best flavoured apples in the world.

Q.—Why did you have to bring these others in? A.—The residents call for a large apple and we could not get them packed in uniform size here in Ontario, and we had to go outside to get what the trade wanted.

Q.—Is it possible to overplant McIntoshes? A.—I do not think it is if proper cold storage facilities are available, and it will do away with bringing

apples from British Columbia and the United States. We unloaded a car of beauties from Washington not long ago; we could not get apples large enough to suit some of our best restaurants in the city. I prefer to handle Ontario apples to foreign apples.

Q.—What can the storage do for the ordinary farmer? A.—We have several growers down east who are putting their apples in cold storage, and they are going to come out on top. I think if we grew enough varieties and had enough cold storage plants here, we would not need to bring any apples in from any country. We could keep our own market supplied. Toronto is becoming one of the greatest centres on the continent for consuming fruit. About fifty or sixty full cars of American strawberries came in last spring, and likely the same will happen this spring. Of course we have to bring in what the people want and what they have the money to pay for.

Q.—What condition does the cherry from local points arrive in? A.—They land in good condition, most of them; they carry well.

Q.—They do not show signs of very bad handling? A.—No, except some of the white varieties. I do not think it is wise to grow many of them. Tartarians and Windsor have always a good market. We do not get enough of the better classes later in the season.

Q.—What apples are preferred for restaurant trade? A.—They like Greenings and Kings. I would not advise much planting of Wolf River; it is not well liked.

Q.—Which variety of Canadian apple suits the trade best? A.—I think the Blenheim for an early apple is one of the best, and Spy for winter use.

Q.—Will they take Spies in preference to Western apples? A.—They take Spies if they can get them packed in uniform size in preference to anything.

Q.—In preference to Rome Beauties? A.—Yes; restaurants do not want them in barrels.

Q.—What does that class of apple run in price? A.—Rome Beauty from $2.50 to $2.75 a box; that is the large sizes.

Q.—How do you account for the Toronto market being so low compared with what other markets are in the fall and winter? A.—So many trucks go out through the country and bring in all sorts of windfalls and peddle them around at a low price that it makes our market low. Snow apples are always good and command a price. The Golden Russet is a very good apple.

Q.—Speaking about grapes, what do you say about the Champion grape? A.—I think the Champion grape does a great injury to the grape market in Toronto. A few thousand baskets of Champions come in; they go around the trade and it sets the people against them, and when the other grapes come in the people are not ready for them.

Q.—Do they fix the price for the balance? A.—Yes. I would advise Moore Early, Worden, Concord and Rogers.

Q.—Is it possible to overdo the market with white grapes? A.—The market will only take a limited quantity. The Jews won't buy white grapes at all; there is a great demand for grapes for wine just the same as cherries.

Q.—What is the reason you can get $3 a bushel for American Transparents and as soon as our Canadians come in they drop to $1.50? A.—The supply makes the price. I am in the commission business; we are one of the necessary evils, I suppose. Shipping so much poor stuff on the market causes the low prices; it should be fed to the hogs. The peddlers get it and sell it and it affects the price of the good stuff.

## VARIETIES OF FRUITS FOR PLANTING.

### The Nurseryman's Viewpoint.

Major Armand Smith, Winona.

It is rather hard to get the consensus of opinion on what are the best varieties to plant. If we could get such from growers I am sure the nurserymen would be only too glad to co-operate along the lines suggested. Undoubtedly there have been too many poor varieties planted in the past, varieties that have proven useless on the market, and some growers have planted varieties that have not been hardy enough and have not been of value to them.

We, as nurserymen, although there are exceptions, I think, wish to recommend those varieties which are the best. It is not to our benefit to get a lot of poor trash on the market because in time it would redound to our disadvantage. If there is a lot of poor trash on the market the sale of nursery stock decreases. So that we come to the point of how best can we help. In this respect someone might bring up the point: Why not legislate to have the Canadian nurserymen plant only certain varieties? This is hardly feasible for several reasons: In the first place you could not legislate against the Canadian nurserymen very well if you allowed nursery stock to come in here not under legislation. The grower who could not get the varieties from Canadian nurserymen would get them from American. If you stopped these varieties coming in from the States, and allowed only the varieties that you wished to come in, the grower who wanted a variety that because of its scarcity on the market commanded a big price, could get it under another name from an American or Canadian nursery or grow the stock himself, so it seems to us the line of procedure is one of education.

Experimental farms and nurserymen have done something along this line, and of course growers, like yourselves who take an interest, know pretty well what to do, but there are a great many growers who do need to be educated. They do not take papers and they do not go to meetings. If we could only devise some means of education for these people I think it would be a very good thing. I was wondering whether there could be such a thing as a Committee on Varieties. If we had a committee of good strong men who represented Ontario and who knew the different communities and sifted down the recommendations of sub-committees, they would possibly get a list of varieties that would be the best; it might be fairly large, but it would be a great deal better than the present condition of affairs. If that committee could act in conjunction with the nurserymen, the nurserymen, through their agents, could go on, recommend these varieties and push them. It is of benefit to us to cut down the list of varieties. We do not make any more money out of growing poor varieties than good ones. We would rather get down to some standard varieties, if we had some general idea of what the grower is going to want. Now, we hardly know what he will want a few years hence, and as a result we have a surplus of one kind of stock which we have to burn up, and a shortage of another.

I thought it might be of interest to the growers to know what, from our standpoint, we have sold in the past years in the largest numbers in the different fruits:

Apples: We have sold more McIntosh and Spy than any other varieties. Second in number come Wealthy and Duchess; then Snow and Delicious, and other varieties coming long behind. In Nova Scotia it is somewhat different; they are still having a large call for Ben Davis and Baldwin and Wagner.

PEACHES: Elberta still leading, then St. John, Fitzgerald, Garfield and Early Crawford.

WHITE FLESH PEACHES: Greensboro.

Q.—Any Mountain Rose? A.—Very few. Last year we had several customers wanted Mountain Rose peaches and we had difficulty in getting them; they were very scarce.

GRAPES: Concord.

Q.—Any demand for Campbell? A.—Yes, and Moore.

Q.—You ought to recommend that; it is very productive on light sandy soil.

PLUMS: Reine Claude, then Damson and Prune; third, Burbank, Bradshaw and Duke.

PEARS: Bartlett, first; then Anjou, Clapp and Keiffer.

Q.—How is the demand for Beurre Bosc? A.—Very little.

RASPBERRIES: Cuthbert, then Columbia for home plants.

BLACK CURRANTS: Black Champion.

RED CURRANTS: Cherry and Fay.

GOOSEBERRIES: Downing and Red Jacket.

CHERRIES: Montmorency practically entirely; a very few Early Richmond being sold at the present time, and it might be a good thing if more Richmond were planted. If there are no Early Richmond planted, in a short time there will not be any on the market.

Q.—Are Royal Annes used? A.—Very little.

Q.—Won't they grow? A.—No calls.

Q.—The St. Catharines factory prefer Richmond to Montmorency for canning purposes? A.—Yes, a good many canning factories do, but generally because the price is cheaper.

SWEET CHERRIES (Black): Windsor, first; then Black Tart, then Bing and Schmitz Biggareau.

SWEET CHERRIES (White): Napoleon, and then a few Governor Wood.

Mr. McGillivray spoke about so many peaches being brought into this country from the States, and it being a shame we had to meet that competition. That is quite true. The reason why those peaches are brought in and wanted by the consumer is that the California peach is a very dry peach, and the consumer can take that peach and throw it around a little and put it back in the can, and the edge would still be clear and distinct. Our peach is very much more luscious and tastes a great deal better, but it has not the appearance to the eye, and although the American canned peach in Winnipeg sells a little higher than our peach, nevertheless the public seem to want it. The only way to protect ourselves on that is to have a higher tariff.

Q.—Is not it the method of peeling peaches that causes that? A.—No, it is the peach itself; it is drier.

Q.—Is not it a fact that our Canadian free-stone would peel as well as the California free-stone? A.—I would not say so.

A MEMBER: It would be well to have all of our fruit labelled Ontario. There are so many Ontario people in the West that the word "Ontario" pretty nearly sells itself, if the quality is there.

MAJOR SMITH: It would help a great deal, but I must say there is a great sentiment in favour of British Columbia, in the West.

Q.—Is not it the habit of the canning factories to take peaches a little over-ripe that cannot be shipped, and consequently the peach is too soft? A.—The canning factory will not do that, but the jam manufacturer does take peaches that way, and as long as there is no waste in the peach itself, and he can cut away any spots, it is all right.

## VARIETIES OF FRUITS FOR PLANTING.

### The Growers' Viewpoint.

George Wilson, St. Catharines.

In selecting varieties to recommend, it is very much like judging girls in a beauty contest; there is a great difference of opinion. A series of meetings have been held in the Niagara Peninsula to discuss this matter, and it was clearly pointed out that there are a lot of inferior varieties of fruits which simply spoil the sale of the good fruits. It is too bad that many of these inferior varieties are put into cans or disposed of when we had such good varieties that were allowed to spoil.

After holding these meetings, committees were appointed, and these committees made recommendations, and I have a list here which I shall read to you.

In preparing a list of recommended varieties of tree fruits and grapes for the Niagara district there are many things to keep continually in mind.

1. The different sections such as Queenston, Fonthill and St. Catharines vary as to earliness, and the selected varieties should vary to suit those conditions.

2. The soils in those sections are variable as is well known by all and this, too, has a bearing on the varieties to be selected.

3. The degree to which varieties are subject to disease and the hardiness of varieties in withstanding severe weather conditions should also be considered.

4. Some varieties of fruit are self-sterile and the choice of other varieties, which would be suitable for cross pollination, is very important. This, perhaps, has not been given sufficient attention in the past.

5. The suitability of varieties for local markets, distant markets, or for canning purposes, should receive greater attention than has been given in the past.

6. Then growers naturally consider the variety on a "returns per tree basis."

These points are not the only considerations necessary, but they serve to show how difficult it is and how unsafe it is to recommend varieties when at this distance from the orchard. The writer feels that growers, who are going to set out orchards, could not do better after all is said and done than consult successful growers in the immediate vicinity to make a final selection from the following list of recommended varieties:

Apples: Astrachan, Duchess, Wealthy, Snow (Jones red strain), McIntosh, Rhode Island Greening, Baldwin, Spy.

Cherries: As the present supply of cherries (sour varieties especially) will probably take care of the demand for some years to come, growers would be well advised not to make very extensive plantings. Varieties might be selected from the following list:

Sour: Richmond (light plantings only), Montmorency.

Sweet: (White) Napoleon, (Black) Tartarian, Elkhorn (moderate plantings only), Windsor, Schmidt Bigarreau, Bing.

Peaches: As many of the peach orchards have been taken out during the past few years and as there are not many young orchards coming on, it is felt that the restrictions, as given for planting of cherries, would not apply to peaches. Greensboro, Arp Beauty, Yellow Swan, Yellow St. John, Fitzgerald, Garfield, Elberta (moderate planting only), J. H. Hale (in moderation only and interplanted for pollination), Lemon Free, Beers Smock (if true to type and name).

The following varieties of peaches have proven very inferior and unsuitable: Early Rivers, Triumph, Sneed, Red Bird Cling.

PEARS: Giffard, Clapp (blights badly), Bartlett, Bosc (blights badly), Howell, Anjou (drops badly), Duchess, Keiffer (large strain).

PLUMS: At the present time very few new plantations should be set out as there is now an over production in a plum year. Some inferior varieties could probably be taken out to advantage. Recommend: Field (the earliest blue domestica), Bradshaw, Imperial Gage, Reine Claude (moderate plantings only), Italian Prune, Shropshire Damson (very large plantings have been set out in last few years), Monarch, Grand Duke.

It is felt that plantings of Japanese plums and Americana varieties should be reduced as they spoil the market for better varieties.

GRAPES: The acreage of grapes at present is probably sufficient to take care of all demands. The Champion grape is condemned and recommendations are made that Champions in a vineyard be taken out and other varieties substituted.

Black: Moore's Early (in moderation), Campbell's Early (on deep, rich soil), Worden, Concord, Wilder (self-sterile, in moderation).

White: Niagara (in moderation).

Red: Agawam (on deep, rich soil).

With regard to the canning of peaches, the attitude taken was the canners realize that for the export trade they will have to pay more attention to the variety of fruits. There is a demand at the present time for superior varieties for canning purposes, but the chances are those varieties are no good for anything else, and the feeling is that the canners had better make ten or twelve-year contracts with growers to grow what they want. The Keiffer is mentioned as one of the recommended varieties, but most of you know who have been growing Keiffers that there are two distinct strains. There is a small one that is very hard, and then there is a large Keiffer which seems to do much better on moist soils, and naturally gives you a larger size, and it is a variety that would prove more profitable.

Garfield is included in this list of peaches. There are many who have not a very high regard for the Garfield, but there is a good strain of Garfield. There is a big Garfield and a little Garfield, a good colored one and a poorly colored one.

There are no very new varieties mentioned in this list, but only those that are pretty generally known throughout the district, and while there are some very promising new varieties coming on, that is a matter that is not appropriate for me to take up at this time. The Experiment Station has a peach that they think well of at the present time, and when that is tried out on different soils and different localities we may have something that will be far superior to those mentioned in this list.

I did not take up the question of raspberries, strawberries, black berries, currants, gooseberries or any of these other small fruits. While they are important, in view of the fact that the trees are long-lived, we simply took up the tree fruits and grapes.

Q.—You did not recommend the German plum? A.—I mentioned the Italian Prune, and there is very little difference between the German and the Italian; either is all right, but the Italian, I consider, is the better prune of the two.

Q.—It is a smaller prune? A.—No, not much difference in the size, but quite a bit of difference in the shape of the tree.

## REPORT OF TRANSPORTATION COMMITTEE.

MR. BUNTING: The Resolution Committee brought in a resolution of appreciation of the way the Carrier Companies handled the fruit last season. It is very difficult to hear in the lower part of this room, and I do not know that all the members appreciated the fact that that resolution was being passed, but I wish on behalf of our Joint Committee to emphasize the appreciation of the larger shippers for the very excellent service that was given last year by the railway companies, and at the close of this resolution I have no doubt that one or two of our larger shippers would like to emphasize that fact.

After passing through the past year, with an unprecedented crop, the rank and file of the fruit industry not only of the Niagara Peninsula but of the Province of Ontario have not a very extended bank account. After everything is counted up, the majority of us feel as though we are property-poor. Perhaps the members are looking to the Transportation Committee for some relief in the coming year in that respect. I do not know that the committee will be able to offer any great encouragement, but I can say this, that the committee have had several joint meetings and have taken the whole question into very careful consideration, and the several resolutions I am about to read are the crystallization of their discussions. These resolutions read as follows:

1. Resolved that with reference to freight rates on fruit and vegetables from Ontario, this committee will prepare and submit representations to the operating railways, and will, if necessary, request a hearing before the Board of Railway Commissioners of our contention that the fruit and vegetable interests of Ontario vitally require, and are entitled to, commodity freight rates lower than existing effective class rates for distribution of their products.

2. With reference to carload minima on fruit and vegetables this committee proposes to represent to the railways and express companies, and asks this convention to approve of the principle, that in construction and adjustment of rates on our perishable products any minimum that is higher than cars can possibly or advisedly be loaded should be lowered, even though this demands adjustment of effective carload rate.

3. With reference to express shipping receipt which releases the express company from liability beyond Fifty Dollars, unless higher valuation declared and insurance assessed, this committee proposes to represent to the Express Traffic Association of Canada, and if necessary to the Board of Railway Commissioners, that this is wrong in principle and adjustment is sought on a per pound valuation or other mutually satisfactory basis.

4. That the express companies be requested to provide joint through rates on fruit from exclusive one line stations in Ontario to exclusive other line stations throughout Canada.

I move the adoption of the report.

The motion was seconded by Mr. Foster, and carried.

THE CHAIRMAN: I want to thank you one and all for the splendid attention throughout our meeting. In the earlier years of the Ontario Fruit Growers' Association the principal theme was how to produce more and better fruit. Then the time came when we had an over-production, and last year we were confronted with problems which we never had to face before, and the programme which has been presented to you on this occasion has resulted from the desire of the executive to give you something that would be of benefit to us for years to come. I thank you all on behalf of the association for your splendid attendance, and will now call the meeting adjourned.

Ontario Department of Agriculture

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# ANNUAL REPORT

OF THE

# STATISTICS BRANCH

# 1922

PART I.—AGRICULTURAL STATISTICS
PART II.—CHATTEL MORTGAGES

PRINTED BY ORDER OF
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*To His Honour* HENRY COCKSHUTT,
*Lieutenant-Governor of the Province of Ontario, etc., etc.*

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the report of the Statistics Branch of the Ontario Department of Agriculture for the year 1922.

Respectfully yours,

MANNING W. DOHERTY,
*Minister of Agriculture.*

TORONTO, 1923.

# Statistics Branch of Agriculture

## PART I—AGRICULTURAL STATISTICS

### THE WEATHER.

TEMPERATURE.—The following table gives the temperature of the Province for each month during the last five years, together with the mean annual temperature, also the mean temperature for the six months, April-September, practically the growing season, together with the average for the five years, 1918-1922, and the forty-one years, 1882-1922.

| Months. | 1922 | 1921 | 1920 | 1919 | 1918 | 1918–1922 | 1882–1922 |
|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | ° | ° |
| January | 16.8 | 23.0 | 7.8 | 24.5 | 8.5 | 16.1 | 18.0 |
| February | 19.5 | 23.6 | 15.8 | 23.7 | 16.5 | 19.8 | 17.5 |
| March | 30.8 | 35.8 | 31.2 | 30.7 | 31.1 | 31.9 | 27.3 |
| April | 43.2 | 47.9 | 38.9 | 41.0 | 42.7 | 42.7 | 41.8 |
| May | 58.3 | 57.2 | 53.4 | 53.9 | 57.2 | 56.0 | 53.9 |
| June | 64.3 | 66.0 | 64.9 | 71.1 | 61.2 | 65.5 | 63.6 |
| July | 67.2 | 75.4 | 65.0 | 71.3 | 68.2 | 69.4 | 68.4 |
| August | 65.6 | 65.9 | 68.0 | 66.3 | 69.4 | 67.0 | 65.7 |
| September | 61.3 | 64.5 | 61.9 | 61.2 | 54.3 | 60.6 | 59.3 |
| October | 47.6 | 48.0 | 54.1 | 50.1 | 49.9 | 49.9 | 47.5 |
| November | 38.0 | 32.9 | 34.3 | 34.4 | 39.3 | 35.8 | 35.3 |
| December | 23.4 | 24.1 | 27.2 | 17.9 | 27.7 | 24.1 | 23.5 |
| Annual mean | 44.7 | 47.0 | 43.6 | 45.5 | 43.8 | 44.9 | 43.5 |
| Mean for six months, April to September | 60.0 | 62.8 | 58.7 | 60.8 | 58.8 | 60.2 | 58.8 |

The mean temperature for 1922 was 44.7 degrees, or 2.3 degrees colder than the preceding year, and 1.2 degrees above the normal for forty-one years, (1882-1922).

The mean for the six months, April-September, was 60.0 degrees, or 2.8 degrees colder than the preceding year, and 1.2 degrees warmer than the forty-one year normal. Eight months were above, two practically normal and two below.

SUNSHINE.—In the following table the averages of sunshine are derived from the records of the weather stations at Woodstock, Toronto, Lindsay, Kingston and Ottawa.

| Months. | Sun above horizon | 1922 | 1921 | 1920 | 1919 | 1918 | 1918–1922 | 1882–1922 |
|---|---|---|---|---|---|---|---|---|
| | hrs. | hrs. | hrs. | hrs. | hrs. | hrs. | hrs. | hrs. |
| January | 285.7 | 109.4 | 114.6 | 99.3 | 84.5 | 106.8 | 102.9 | 78.3 |
| February | 291.4 | 100.4 | 92.1 | 115.4 | 116.6 | 96.1 | 104.1 | 104.3 |
| March | 369.9 | 162.6 | 111.7 | 155.7 | 148.3 | 182.7 | 152.2 | 145.9 |
| April | 406.4 | 181.3 | 179.4 | 145.6 | 139.7 | 194.7 | 168.2 | 180.9 |
| May | 461.1 | 236.0 | 258.3 | 265.6 | 192.9 | 208.3 | 232.2 | 213.1 |
| June | 465.7 | 228.5 | 302.4 | 227.0 | 307.0 | 261.6 | 265.3 | 247.9 |
| July | 470.9 | 298.8 | 280.2 | 231.5 | 308.8 | 272.2 | 278.3 | 268.5 |
| August | 434.5 | 256.0 | 242.2 | 227.0 | 210.6 | 260.3 | 239.2 | 239.9 |
| September | 376.3 | 218.0 | 194.8 | 217.6 | 184.8 | 144.3 | 191.9 | 186.9 |
| October | 340.2 | 160.8 | 132.9 | 156.3 | 119.6 | 134.3 | 140.8 | 138.8 |
| November | 286.9 | 60.7 | 49.1 | 49.6 | 58.9 | 84.3 | 60.5 | 78.2 |
| December | 274.3 | 78.8 | 65.0 | 47.2 | 75.8 | 64.7 | 66.3 | 62.6 |
| Total for the year. | 4,463.3 | 2,091.3 | 2,022.7 | 1,937.8 | 1,947.5 | 2,010.3 | 2,001.9 | 1,945.3 |
| Total for six months, April to September | 2,614.9 | 1,418.6 | 1,457.3 | 1,314.3 | 1,343.8 | 1,341.4 | 1,375.1 | 1,337.2 |

The year 1922 had 2,091.3 hours of sunshine, 146.0 hours more than the average for the last forty-one years. The six growing months, April-September, had 1,418.6 hours or 81.4 hours more than average. Nine months were in excess and three were deficient. January and September with 31.1 hours each in excess were the greatest, and June with 19.4 hours below had the greatest deficiency.

PRECIPITATION.—The fall or both rain and snow for the five winter months, including November, 1921, and March, 1922, is given in the following table for five years, together with the average for the forty-one years, 1882-1922. One inch of water is equivalent to ten inches of snow.

| Months. | 1922 | 1921 | 1920 | 1919 | 1918 | 1918–1922 | 1882–1922 |
|---|---|---|---|---|---|---|---|
| November: | in. | in. | in. | in. | in. | in. | in. |
| Rain | 1.08 | 1.72 | 1.89 | 2.03 | 0.56 | 1.46 | 1.95 |
| Snow | 11.7 | 10.1 | 7.2 | 3.1 | 7.0 | 7.8 | 7.4 |
| December: | | | | | | | |
| Rain | 1.39 | 1.79 | 0.07 | 1.37 | 0.14 | 0.95 | 1.13 |
| Snow | 12.9 | 16.3 | 14.1 | 15.4 | 20.4 | 15.8 | 15.5 |
| January: | | | | | | | |
| Rain | 0.33 | 0.47 | 0.00 | 0.55 | 0.02 | 0.28 | 0.92 |
| Snow | 14.1 | 7.5 | 20.1 | 11.4 | 28.9 | 16.4 | 18.9 |
| February: | | | | | | | |
| Rain | 0.89 | 0.21 | 0.00 | 0.57 | 1.50 | 0.63 | 0.74 |
| Snow | 16.2 | 13.3 | 14.8 | 9.6 | 17.2 | 14.2 | 15.9 |
| March: | | | | | | | |
| Rain | 1.21 | 3.01 | 1.28 | 1.82 | 0.54 | 1.57 | 1.20 |
| Snow | 8.0 | 4.4 | 7.3 | 1.6 | 10.6 | 8.4 | 10.5 |
| Five months: | | | | | | | |
| Rain | 4.90 | 7.20 | 3.24 | 6.34 | 2.76 | 4.89 | 5.94 |
| Snow | 62.9 | 51.6 | 63.5 | 51.1 | 84.1 | 62.6 | 68.2 |

The total amount of rainfall for the five months was 4.90 inches, or 1.04 inches below the average for the forty-one years, 1882-1922.

The total amount of snowfall was 62.9 inches, or 5.3 inches below normal. November and February were above, while December, January and March were below their respective averages for snowfall for the forty-one year period.

The rainfall for the six months, April-September, comprising what is regarded as the growing season for most crops, is given in the following table, covering the last five years, 1918-1922, and the normal for the forty-one years, 1882-1922.

| Months. | 1922 | 1921 | 1920 | 1919 | 1918 | 1918–1922 | 1882–1922 |
|---|---|---|---|---|---|---|---|
| | in. | in. | in. | in. | in. | in. | in. |
| April | 3.22 | 2.92 | 2.31 | 2.53 | 1.38 | 2.47 | 1.88 |
| May | 1.86 | 2.05 | 0.82 | 4.24 | 2.62 | 2.32 | 2.78 |
| June | 3.47 | 2.13 | 2.85 | 2.26 | 2.69 | 2.68 | 2.77 |
| July | 3.50 | 3.64 | 3.56 | 2.16 | 2.18 | 3.01 | 2.82 |
| August | 2.31 | 2.49 | 2.13 | 2.95 | 2.94 | 2.57 | 2.66 |
| September | 2.34 | 2.76 | 2.43 | 2.88 | 4.31 | 2.94 | 2.63 |
| Total for six months | 16.70 | 15.99 | 14.10 | 17.02 | 16.12 | 15.99 | 15.54 |

The rainfall for the six months, April-September, was 16.70 inches, or 0.71 inch greater than the previous year, and in comparison with the forty-one years it was 1.16 inches more. Three months, April, June and July, were above, and three were below, May, August and September, their respective averages, the extremes being April 1.34 inches above, and May 0.92 inch below.

## SPRING SEEDING AND VEGETATION.

"The sowing of spring grains on the whole began later than usual," said the May crop bulletin, "but the seed found a most favourable bed, as the land was working in excellent tilth. Most of the seeding was done in May, and timely warm rains brought the newly-planted fields forward with a rush, and at the time of reporting correspondents were pleased with the appearance of the fields. Of the grains, more oats and barley appear to have been put in. There will also be a large acreage of corn. More potatoes than usual were planted early, and a considerable acreage of mangels was also sown. It looks as if the increase in the area of sweet clover will also be considerable. Some correspondents report that more mixed grains will be raised for feed, and others predict that more millet and buckwheat will be grown. On the whole the season though somewhat late, has been one of the most favourable for seeding experienced for years. It looks also as if the season of rapid growth in May has brought vegetation forward to practically the normal for the time of year."

STATISTICS OF FARM CROPS.

| Field Crops. | Acres. | Production. | Bushels per acre. | Market Value. | |
|---|---|---|---|---|---|
| | | | | Total. | Per acre. |
| | | bush. | bush. | $ | $ c. |
| Fall Wheat | 813,935 | 17,792,958 | 21.9 | 18,616,746 | 22.87 |
| Spring Wheat | 124,206 | 2,099,503 | 16.9 | 2,207,565 | 17.77 |
| Barley | 433,922 | 13,971,811 | 32.2 | 8,561,782 | 19.73 |
| Oats | 3,034,090 | 116,033,569 | 38.2 | 50,450,114 | 16.63 |
| Peas | 105,544 | 2,076,965 | 19.7 | 2,914,720 | 27.62 |
| Beans | 39,999 | 622,781 | 15.6 | 1,579,549 | 39.49 |
| Rye | 152,709 | 2,500,354 | 16.4 | 1,959,112 | 12.83 |
| Buckwheat | 197,812 | 4,266,215 | 21.6 | 3,137,448 | 15.86 |
| Flax | 4,556 | 48,662 | 10.7 | 106,046 | 23.28 |
| Corn (in the ear) | 265,018 | 18,459,363 | 69.7 | 8,609,503 | 32.49 |
| Potatoes | 172,858 | 20,349,541 | 117.7 | 10,385,525 | 60.08 |
| Carrots | 2,124 | 472,643 | 223.0 | 94,529 | 44.51 |
| Mangels | 35,274 | 16,366,353 | 464.0 | 3,273,271 | 92.80 |
| Turnips | 67,635 | 29,923,528 | 442.0 | 5,984,706 | 88.49 |
| Sugar Beets | 20,725 | 7,616,281 | 367.0 | 1,523,246 | 73.50 |
| Mixed Grains | 552,399 | 21,270,479 | 38.5 | 11,882,085 | 21.51 |
| | | Tons | Tons | | |
| Corn (for silo) green | 438,819 | 4,413,191 | 10.06 | 17,652,764 | 40.23 |
| Hay and Clover | 3,575,662 | 5,568,459 | 1.56 | 66,964,036 | 18.73 |
| Alfalfa | 221,326 | 629,135 | 2.84 | 7,439,403 | 33.61 |
| Totals— | | | | | |
| 1922 | 10,258,613 | | | 223,342,150 | 21.77 |
| 1921 | 10,075,073 | | | 222,177,881 | 22.05 |
| 1920 | 10,108,272 | | | 367,608,619 | 36.37 |
| 1919 | 9,915,884 | | | 397,238,400 | 40.06 |
| 1918 | 9,992,825 | | | 363,909,778 | 36.42 |
| 1917 | 9,718,259 | | | 333,353,438 | 34.30 |
| 1916 | 9,548,876 | | | 223,748,948 | 23.43 |
| 1915 | 9,762,951 | | | 210,674,415 | 21.58 |
| 1914 | 9,621,444 | | | 199,152,945 | 20.70 |
| 1913 | 9,541,537 | | | 168,455,253 | 17.65 |
| 1912 | 9,574,474 | | | 185,790,341 | 19.40 |

The acreages devoted to other crops in 1922 were as follows: Orchards, 239,914; small fruits, 27,242; summer fallow, 198,841; pasture (cleared), 3,401,033.

Ratios of Areas Under Crop.—The following table shows the number of acres under the various crops in 1921 and 1922 per 1,000 acres of cleared land, together with annual averages for various periods.

| Year | Fall Wheat | Spring Wheat | Barley. | Oats. | Peas. | Beans. | Rye. | Buck-wheat. | Corn. | Potatoes. | *Roots. | Hay and Clover. | Mixed Grains. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922 | 54.2 | 8.3 | 28.9 | 202.1 | 7.0 | 2.7 | 10.2 | 13.2 | 46.9 | 11.5 | 8.4 | 238.1 | 36.8 |
| 1921 | 41.4 | 10.2 | 30.8 | 206.1 | 7.1 | 1.8 | 8.2 | 9.9 | 45.9 | 10.9 | 8.8 | 236.5 | 41.2 |
| Annual average: | | | | | | | | | | | | | |
| 1912–1921 | 44.5 | 13.4 | 38.4 | 189.9 | 9.1 | 4.0 | 9.0 | 12.9 | 46.6 | 10.8 | 11.0 | 237.5 | 35.6 |
| 1902–1911 | 51.3 | 13.0 | 50.7 | 192.8 | 27.7 | 3.6 | 8.0 | 9.4 | 40.1 | 10.9 | 15.8 | 219.0 | †33.1 |
| 1892–1901 | 73.2 | 28.0 | 39.2 | 180.2 | 60.5 | 4.1 | 10.1 | 10.3 | 35.5 | 12.9 | 15.6 | 198.2 | ..... |
| 1882–1891 | 81.6 | 50.9 | 67.2 | 150.4 | 60.5 | 2.4 | 9.4 | 6.2 | 17.7 | 14.0 | 12.2 | 207.1 | ..... |
| 1882–1922 | 60.9 | 24.3 | 47.4 | 180.6 | 36.5 | 3.5 | 9.1 | 10.0 | 36.4 | 12.0 | 14.3 | 218.0 | ‡34.9 |

*Mangels, turnips, carrots and sugar beets. †1907–1911. ‡1907–1922.

## THE GRAIN CROPS.

Fall Wheat.—The newly planted fall wheat was thus described in the crop bulletin issued in December, 1921: "The acreage of wheat sown this fall is larger than that of last year. Sowing ranged from August 20th to October 12th. Much of it was put in late to avoid the Hessian fly. The land was in good condition to receive the seed, generally speaking, especially on summer fallow, and the young wheat made a good start. Some early sown was said to have too much top, and some fields look rather yellow, but as a whole the crop is likely to enter the winter in very fair shape. A few complaints have been made of injury by Hessian fly, and there is odd mention of wireworm. Dawson's Golden Chaff is the variety most largely grown."

The first spring bulletin of 1922, issued in April, said: "The crop as a whole received a good start, and entered the winter in good condition, although it was thought that some early sown fields had rather too much top. In some localities later on there was not a sufficient blanket of snow for good winter protection, and when correspondents reported on April 10th, the danger from heaving had not been passed; but taking the Province over, especially those counties in which fall wheat is most largely grown, the crop may be described as giving promise of at least average condition. Timely rains and bright sunny weather as the latest reports came in caused the fields to green rapidly, and further confirmed the expectations of at least an average yield. Odd complaints of injury by the fly came from the County of Kent."

The May bulletin said: "April frosts after a start in growth gave the young plants a setback, but good growing weather later with timely rains brought the fields along in a most encouraging way, and when correspondents reported around the 20th of May the prospects were favourable for a fairly good crop, generally speaking. Only a small area has been plowed up this spring, but on low lying places, where the crop was covered with ice for a time, some barley or other spring grain has been worked in. Odd mention only was made of the Hessian fly and wireworm, and the crop on the whole has been freer than usual from insect injury. At present most of the fields have a forward appearance."

The following appeared in the August bulletin: "The young fields received a setback from April frosts, but favourable rains later brought them along nicely. Later weather also proved favourable for the crop, and at the time of harvesting it presented a fine appearance in most localities, although very variable yields are reported in the same sections. Cutting took place with favourable weather in most districts, and considerable of the grain was threshed in the fields. There were some complaints of injury from Hessian fly and smut, but the crop generally is regarded as a very good one, both as to yield and quality. Cutting covered from July 5th to the end of the month."

According to November reports, fall wheat threshed well, and while reports of quality varied in most cases the descriptions of the sample ran from fair to good. Several correspondents complained of the quantity of chess found in the threshing. There was a fair length of straw.

The new crop of fall wheat was referred to in the December bulletin as follows: "The acreage of fall wheat sown will be a little less than that of last year. The ground was rather dry at seeding, but the catch was on the whole a good one. Timely rains fell later and brought the young wheat along very nicely, and taken as a whole it has met the winter well topped and vigorous looking generally. There are odd complaints of grubs attacking the crop on sod, and the Hessian fly and wireworm were reported to be doing injury in

several counties. Sowing covered a period from August 20th to the first week of October, most of it going about September 10-20th. Dawson's Golden Chaff is still the variety most largely grown."

Spring Wheat.—This cereal is not in much favour, judging by the remarks of correspondents in August and the decreasing acreage. The yield per acre was about an average, although individual yields varied greatly. Some rust was reported, but the general quality of both grain and straw was good. The crop was harvested between August 1st and the 15th.

The November bulletin briefly referred to this crop by saying: "Spring wheat, which is steadily decreasing in acreage, is spoken of as being only a fair crop both as to yield and quality."

Barley.—August reports were to the effect that the barley crop was a most satisfactory one, the yield per acre being large and the quality excellent, the grain as a whole being of good and full weight. The straw, however, was rather short in length. A little rust and smut was reported. The crop was well harvested on the whole. Cutting ranged from July 25th to August 12th.

The December bulletin said of barley: "This cereal has given a most satisfactory yield per acre, and most of the grain is of first quality. The greater part of the barley raised in Ontario is now fed to live stock."

Oats.—This crop was thus described in the August bulletin: "Correspondents are practically unanimous as to the excellence of the oat crop, several describing it as 'The best in years.' The yield per acre will go considerably over the average, and the sample is of fair weight. There were reports of some fields ripening too rapidly. A few reports also came in of difficulty in cutting the crop owing to lodging. Rust was complained of in a few instances, chiefly on late sown fields, but the general quality of the straw, though somewhat short in length, was good. Harvesting began early in August and was being completed as correspondents reported."

Disappointment as to quality of the crop was expressed in the December bulletin as follows: "Oats have also yielded generously, but the grain is not relatively as plump as that of barley. Some correspondents say the crop ripened too quickly. That sown early was the better in quality. There were some complaints of rust. The straw was short, but of good quality."

Rye.—August reports regarding rye were favourable, both as to yield and quality of the grain. Cutting took place between July 10th and August 5th.

The December bulletin had the following: "This crop is now but little grown for the grain, being used chiefly for soiling. The yield per acre was better than an average, and the quality was good."

Peas.—Peas have fallen off in favour as a field crop, and are now grown chiefly for canneries and seed houses. Where raised for these purposes it has done fairly well, according to the August reports. Pulling extended from the beginning of August to the 22nd.

The December bulletin said: "The yield per acre has turned out fully an average, and the quality is put at from fair to good."

Buckwheat.—September was rather dry for this crop, and some of the fields sown late were touched by frost. Taken all together, however, most of the crop was harvested in good general condition as regards both yield and quality.

Beans.—According to the August reports beans promised to be an average in yield, although they were not so largely grown as formerly. Harvesting was expected to begin about the last week of August and continue until about the middle of September.

The opinion expressed in the November bulletin was that the yield per acre of beans would be about an average. The quality was said to be from fair to good, although there were complaints of too much rain at harvesting.

Corn.—This crop was generally late in planting, and cool, wet weather in June and July also held it back; but with favourable August weather it made good growth and promised to be an average crop of good quality should there be no early frosts. In the August reports there was little mention of the presence of the borer. There was no complaint of poor seed, which speaks well for the excellent quality of last year's corn.

The November bulletin said: "Notwithstanding the comparatively late start in the spring for most of the crop, corn came along well, and in most cases was fit for cutting early. The open fall gave ample time to secure most of the crop, and only a small portion of it was caught by frost. As a rule the cobs were well filled, although there were a few complaints of small ears. Silo filling proceeded under most favourable circumstances, and in most cases there was more than enough for that purpose. Some injury by the borer was mentioned in western Ontario."

## HAY AND CLOVER.

Clover.—Speaking of the prospects of clover in the early spring, the April bulletin said: "This crop is hardly as promising as fall wheat, as it seems to have been more affected by the winter exposure caused by the comparately light snowfall, and there are also some complaints of early spring heaving. However, some very fine looking fields are reported, especially on well drained land."

The May bulletin said: "Clover has done relatively better since spring growth began. Most of the reports regarding the present appearance of the fields are more or less favourable. The crop looks best on high and well drained land, but on low lying places or poorly drained fields the effects of winter injury by ice-forming can be observed."

According to the August bulletin the early summer weather was in favour of pastures, and the average yield of hay was well up to the standard, although in a few cases small returns were reported. Most of the crop was cut and got into the barns under favourable circumstances, and was rated as first-class quality, although some was left out in the fields too long owing to the pressure of the grain harvest. Cutting ranged from June 30th to July 15th. The second crop had received an excellent start from the favourable rains.

Pastures during the fall were unusually good. Clover seed however, was disappointing to growers. Red clover did well in some cases, but as a rule the yield is comparately poor, drouth at filling time and the presence of the midge being given as the chief reasons.

Alfalfa.—The May bulletin had the following: "Alfalfa has done well on the whole. The sudden popularity of sweet clover as a fodder crop, however, appears to have somewhat checked the increase in the area given to alfalfa."

The first cutting of alfalfa began as early as the last week of June, and proved satisfactory. The second cut also turned out well. The yield of seed was well spoken of in the August reports.

The latest fall reports were to the effect that alfalfa did well for hay, but was only fair for seed. It is growing more popular in the northern districts.

Alsike.—Reports regarding alsike are not so encouraging as those relating to other clovers.

The November bulletin stated that alsike had promised well, but some of it lay too long in the field after cutting, and was poor for seed.

Sweet Clover.—August reports were to the following effect: "Sweet clover has yielded well, but much of it was difficult to cure owing to frequent rains at the time of cutting, and several farmers are said to have burnt some of that which had been cut and which was ruined by the wet weather."

In dealing with sweet clover the December bulletin said: "This crop does not appear to be growing in favour with many of those who have been trying it out, although it is highly spoken of by others. A number of complaints were made of injury while cut and lying in the fields in wet weather, some of it having to be turned under for green manure or else burned. The crop is not now grown so much for seed as formerly, owing to poor prices."

## POTATOES AND FIELD ROOTS.

Potatoes.—The August bulletin said: "Reports regarding potatoes are on the whole favourable, and although some correspondents speak of too much rain for best results very little rot is mentioned. Individual reports as to yields range from light to bumper, but it is likely that the average yield per acre will be a full one, and the acreage is a large one."

Late reports were thus summarized in the December bulletin: "Growers of potatoes were at first pleased with the prospects of the crop, but later on rot developed in many parts of the Province, and is still proceeding in some cellars and pits. The yield estimated at the time of digging seems fairly high, but will need to be considerably discounted on account of loss from disease. The very low prices now offering render sales slow, and some farmers are feeding some of their supply to live stock."

Roots.—The August bulletin had the following: "The moist and comparatively warm weather prevailing since roots were planted has been most favourable for these crops, although necessitating more cultivating owing to unusual growth of weeds. Turnips, mangels, carrots and sugar beets are all listed as coming along well, and are promising from fair to large yields. One farmer in Proton is said to be growing sixteen acres of turnips."

According to the report appearing in the December bulletin, all classes of roots and tubers had good weather for both growth and housing, and conditions for harvesting were never easier where there was sufficient help. Nearly all were taken care of by the first of November. The following crops were referred to more particularly:

"There is an odd complaint of the maggot, and one correspondent says that some turnips are too large to be marketable, but the crop generally may be classed as a good one. The low price prevailing, about eight cents a bushel, is keeping many farmers from selling as early as usual.

"Practically all the reports received concerning mangels are favourable regarding both yield and quality. Like all the other roots they were easy to handle when harvested.

"The few references to carrots by correspondents were to the effect that they were a good crop, but that they are not now much grown.

"Sugar beets may be classed as giving a full yield of good general quality. They did best where planted early on well prepared land. An Essex correspondent, who knows the country well, states that beets raised for sugar this season yielded about nine tons per acre, with an average sugar content of 15.5 per cent."

## MISCELLANEOUS.

Flax.—Correspondents have comparatively little to say regarding this crop, which has fallen off greatly in acreage since 1920. Where grown this season, however, it did well. Many farmers prefer to make a mixed sowing of flax with grains.

Tobacco.—The August bulletin said: "Tobacco growing does not appear to be as much in favour as in recent years, and correspondents have not reported very fully regarding it. The early part of the season was rather too cold for the crop, but August has been favourable, and rapid maturing was taking place as correspondents reported. Harvesting was expected to begin about the end of the month, and a fair return was expected. Some injury by cutworms was reported."

Tobacco was thus referred to in the December bulletin: "Flue tobacco, with a comparatively large acreage, has not done so well as usual this season, but Burley has given a good yield of a quality to match. Most of the crop was harvested in time to escape frost."

Fall Plowing.—The December bulletin said: "With the open weather prevailing the greater part of the season this work was well advanced as correspondents reported, although the comparatively heavy harvest and the work of handling the big supply of corn for ensilage somewhat hindered operations. More sod than usual has been turned under. The total acreage done is comparatively large, about equalling that of last year."

Threshing and Marketing.—The following appeared in the December bulletin: "Most of the threshing was over when correspondents reported, as the very favourable weather enabled threshers to handle the job quickly. More of this work was done in the field than formerly. Prices for all kinds of grain have been lower than holders care to sell at, and comparatively little has been disposed of except where ready money was absolutely needed. It is likely that more grain will be fed on the farm this winter unless market values rise high enough to entice holders to sell in preference."

Farm Improvements.—Comparatively little was done in the building line beyond making necessary repairs to houses and barns. About the average extent of fencing has been put up. A correspondent stated that some farmers are making their fields larger. A fair stretch of draining has been done, but this work has been handicapped by the high price of tile and the lack of proper help.

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## FRUIT.

The April bulletin contained the following: "Ice-storms twice during the winter—one around February 22nd, and the other at the outgoing of March, the latter being the most severe—did considerable injury to orchards and wood lots, more especially in the western half of the older portion of the Province. Many fruit trees were split at the crotches, and some orchards showed large piles of broken branches and twigs at the foot of most of the trees. On the other hand, owing to the light fall of snow, young trees suffered less than usual from injury by mice."

May reports concerning fruit were thus summarized: "Reports are practically unanimous as to the profuse show of blossom on orchard trees. The weather at the period of bloom was favourable for the setting of fruit, being dry and free from frost, and where spraying has been practised good yields are

looked for. Some correspondents make reference to the injury to old fruit trees by the ice storms of February and March. While early apples are expected to be abundant, Spies and other late varieties will be scarcer. Bush fruits are promising, although there are some complaints of raspberries being killed back. Strawberries are expected to yield well, although some low fields were hurt by ice."

The following favourable report was given in the August bulletin:

"Taken all together the season has been a generous one for fruit.

"Apples of the harvest and fall varieties are plentiful, but the better winter sorts, such as the Spy and Baldwin, are as usual rather scarce. There was a heavy drop of some of the earlier apples, and worm and scab attacked unsprayed trees, but well cared for orchards are showing some very handsome fruit. Prices at present, however, are discouraging to apple growers.

"Pears also have done well, generally speaking, yields being described as being from fair to large.

"Peaches are promising heavy yields of well developed fruit, and Early St. Johns were on the market as correspondents reported.

"Plums, where sprayed for the curculio, have yielded generously. A Brant correspondent describes the return per tree as the heaviest in years.

"Cherries also yielded heavily, but some correspondents complain of injury from black-knot. Birds were also troublesome to this crop.

"Grapes are reported as promising a large yield, and are well bunched. This fruit has been one of the most consistent in bearing for some years, and owners of vineyards where the fruit is most largely grown are now well organized to handle the crop.

"Strawberries were on the whole a good crop, although they ran into rainy weather at the height of the marketing. All classes of currants did well. Raspberries were much better in yield than was expected after the reported winter injury to the bushes, the weather at ripening being most favourable; in fact, few fruits paid better returns to the raisers. Thimbleberries also yielded generously."

The December bulletin said: "Fruit trees and vines are in good condition except where injured by ice storms in the latter part of last winter. There has been a considerable shipment of fall and winter apples at fair prices where the trees had been sprayed and the fruit carefully picked and packed; but a quantity of poor fall apples practically went begging for buyers. Pears, plums and peaches were plentiful, but prices were not so good as usual. There were too many small peaches where not thinned, and some were picked too early. Grapes were a fair crop, and sold well."

## LIVE STOCK AND THE DAIRY.

The following survey of live stock conditions appeared in the April bulletin:

"Taken as a whole, live stock are in remarkably good health, although not in much flesh, as in most cases they have been fed sparingly, owing to the scarcity of feeding grains. The splendid crop of corn, however, both as to quantity and quality, furnished a good basis for roughage, especially for cattle.

"Horses generally are in good working condition, but have been more closely rationed than usual. Sales are rather slow, although heavy drafts and good chunks are bringing fair prices. Some correspondents predict a scarcity of horses in a few years, as fewer colts are being raised than formerly.

"There are fewer cattle being carried over for beef, as many were disposed

of last fall on account of the scarcity of grain feeds. Less cattle than formerly will be finished in the stall and more on the grass. More calves than usual have been vealed, and fewer have been kept over for beef.

"Dairy cattle are keeping well up in numbers, and milk flow is said to be unusually good for the season, although prices are somewhat discouraging to producers. Good dairy cows are selling at relatively better prices than are beef animals. Like other live stock, dairy cows do not look as fleshy as usual, owing to very careful feeding, but they are remarkably free from disease.

"There has been considerable falling off in the number of hogs, owing largely to the marketing of so many brood sows since the slump in prices a year or more ago. Good breeding sows of bacon type are now in very strong demand, and at encouraging prices to owners. Little pigs are comparatively scarce, and are selling at from $10 to $16 a pair. There are some reports as to comparatively poor littering this spring.

"There has also been a marked reduction in the number of sheep, mainly, it is said, on account of the large drop in the price of wool. While some losses are reported from too early lambing, most of the returns speak favourably of the vigour and general condition of the new arrivals."

The April bulletin also had the following to say regarding fodders: "The excellent corn crop, both for grain and for the silo, has been the saving feature of the fodder situation of the winter of 1921-22. Oats, barley, and spring wheat were more or less failures, and the former was relatively as poor in quality as in yield. Some farmers are looking for old grain for seed. Hay was in fair quantity in some of the western counties, and a good deal of it was pressed and shipped out at comparatively low prices, but it was light in yield and dear in price in the eastern portion of the Province, and some of the northern districts. Prices had a remarkably wide range, varying from $15 to $30 a ton. Straw was unusually scarce and high in price, in some cases reaching $12 a ton. Many farmers had to supplement their supplies with oats from the West and various mill products. Those with silos, however, were able to ease off considerably with both hay and grain, and had comparatively little difficulty in bringing their live stock through,—rather thin-looking, perhaps, but in good health. More silos are being erected as a result."

The May bulletin gave this further statement concerning spring supplies of fodder: "Not for several years have fodder supplies been so low, generally speaking, as at the time of reporting. Grain especially is scarce, owing largely to the light yield and the poor feeding quality of the oat crop. Many farmers had to import western oats during the winter to carry over their live stock. Very little wheat is said to be on hand. Although there was a surplus of hay in some of the western counties, which exported freely, many farmers in the eastern counties had to buy, and at high prices. The large crop of corn, with its excellent feeding value, was the most cheering feature of the fodder problem. The silo practically saved the feed situation in many counties. As live stock was turned out in the grass later than ordinarily a greater demand than usual was made on spring fodder supplies."

The following from the August bulletin shows that all classes of live stock were then in good shape with pastures in fair condition:

"Pastures have been from fair to good nearly all summer, and where not overcropped were carrying live stock over in good condition. The milk flow has been fully up to the average—some speak of it as larger. Meadows are still in fair condition, and this, with the large yields of grain and hay, and the good promise of hay and roots, is encouraging to owners of live stock, as it will

ensure easy wintering. Some farmers speak of intending to keep more young cattle over this winter than last. In fact, it is safe to say that there will likely be more good fodder on hand in Ontario when the snow falls than for some years.

"Cattle are in good general condition, but prices for even fair beef animals have been very discouraging to raisers. Owing to the shortness of hay last season many cattle were got rid of rather than to try to winter them, but despite the low prices now prevailing it is likely that there will be a decided increase in the number of feeders kept over. There is a large supply of cream going to butter factories, and the quality of the make is on the whole good. The present price for cheese, however, is not encouraging to factorymen, and there is a tendency for dairymen even in eastern Ontario to turn more to creaming their milk.

"Good heavy farm horses are still commanding fair prices, but there is very little demand for light animals.

"Hogs are scarcer than in more recent years, but prices just now are better relatively than those paid for cattle. Brood sows and young pigs are in demand at good prices, but too many of the latter were disposed of last fall and winter.

"Sheep are not so popular as they were a few years ago, the great slump in the price of wool having frightened many farmers out of raising them. There is, however, a strong demand for well fitted lambs, for which very satisfactory prices are paid. Too many uncastrated and otherwise improperly prepared lambs are being put on the market, and help to keep prices down.

The following concerning live stock appeared in the December bulletin:

"Farmers are expressing satisfaction over the fact that winter feeding was not necessary until later than usual, as many cattle were on the grass until well into November. Pastures during summer and the greater part of the fall were unusually good. All classes of live stock are in good general condition. With plenty of fodder on hand the large number of animals being kept over for beef ought to be maintained in good form. More young cattle than usual have been brought in for feeding. Fresh milk cows are in good demand at from $60 to $100, but dry cows in some of the cheese counties have brought only from three to four cents a pound. Calves have been selling well, from nine to eleven cents a pound being paid. There has been a wide range in prices paid by drovers for beef cattle, running all the way from four to nine cents a pound, mostly around six cents.

"Horses are reported to be in good general shape, and there has been a fair demand for good working animals.

"Hogs, which have been marketed all through the year, have been moving lively of late, although there are fewer on hand than in recent years. There is a noticeable improvement going on toward the more approved bacon type. Prices range from $9.50 to $12 per cwt., live weight, according to quality and accessibility to railways and packing houses. Small pigs are selling at from $12 to $14 a pair.

"Fewer sheep are being kept, the price for wool having discouraged raisers. Lambs, however, are selling readily in fine condition off rape at from nine to fourteen cents a pound, chiefly around eleven cents."

Dairy conditions were thus specially referred to: "The flow of milk was unusually good during the summer and fall. Taking it all together dairying has paid better this season than any other branch of agriculture. Creameries have done better than cheese factories, as the price of butter was relatively better than for cheese. The quality of all classes of dairy produce has kept

well up to the standard, although a Dufferin correspondent claims that the flavour of milk has been somewhat impaired by the feeding of sweet clover. Holsteins and their grades are mostly used by dairymen, although some farmers in the St. Lawrence and Ottawa counties hold that with the new test system in cheese factories, Ayrshires are getting more attention than formerly."

The fodder outlook was most encouraging, judging from the December returns: "With a generous hay crop and a good yield of well matured corn, fodder supplies are classed as plentiful compared with the average year. There is also a larger supply of grain on hand for feeding purposes. This surplus of feed has led many farmers, especially in western Ontario, to bring in extra cattle for feeding, some of them from the Western Provinces. Hay is of good quality as a rule, and is selling at lower figures than for years, prices ranging from $8 to $10 a ton in the barn, and from $12 to $18 on the market, according to quality and location. Silos were filled under most favourable circumstances, and the contents will make excellent feed. A relatively good supply of alfalfa and sweet clover is also on hand. Several correspondents are of opinion that less mill feeds than usual will be purchased this winter."

Poultry.—As usual, correspondents are divided in opinion on the question of profit in poultry. Some say that as much depends upon the man as on the fowl. Several reports put the average annual profit, when properly kept, at about a dollar a hen, while others say that there is no gain in keeping them. There is a marked tendency toward improving the flocks by culling poor layers and introducing more pure-bred birds.

## STATISTICS OF LIVE STOCK.

Statistics.—The following table gives the total number and value of the several classes of live stock and poultry on hand June 15, 1922, together with live stock sold or slaughtered in the year preceding that date.

| Live Stock. | On hand, June 15, 1922. | | Sold or slaughtered in year ending June 15, 1922. | |
|---|---|---|---|---|
| | No. | Value. | No. | Value. |
| | | $ | | $ |
| Horses (all ages) | 685,852 | 74,535,855 | 53,416 | 6,563,473 |
| Cattle: | | | | |
| Milch cows | 1,235,665 | 65,091,068 | 883,620 | 32,629,693 |
| Other cattle | 1,600,516 | 38,808,348 | | |
| Sheep and lambs | 986,617 | 6,612,959 | 606,122 | 4,262,967 |
| Swine (all ages) | 1,553,434 | 16,550,636 | 1,928,337 | 39,556,147 |
| Poultry (all kinds) | 13,964,317 | 12,241,252 | 6,436,516 | 7,462,955 |
| Totals: | | | | |
| 1922 | | 213,840,118 | | 90,475,235 |
| 1921 | | 218,123,685 | | 97,022,845 |
| 1920 | | 326,737,337 | | 152,213,847 |
| 1919 | | 339,607,932 | | 149,727,250 |
| 1918 | | 324,107,476 | | 126,742,038 |
| 1917 | | 289,676,977 | | 114,740,881 |
| 1916 | | 263,869,539 | | 99,159,081 |
| 1915 | | 254,982,332 | | 93,762,223 |
| 1914 | | 250,870,078 | | 93,017,235 |
| 1913 | | 237,591,885 | | 89,651,016 |
| 1912 | | 225,848,942 | | 84,982,339 |

The values for the several classes of horses on hand June 15th, 1922, were as follows: Stallions, $999,780; mares, $40,076,161; geldings, $29,971,435; colts and fillies, $3,488,479.

The values for the several classes of "other cattle" on hand were as follows: Bulls, $4,764,577; calves, $7,202,828; steers, $8,736,332; all other cattle (except milch cows), $18,104,611.

The values for sheep on hand were $3,787,270; lambs, $2,825,689.

The values for brood sows on hand were $5,858,204; all other pigs, $10,692,432.

The values for the several classes of poultry on hand were as follows: Turkeys, $1,058,772; geese, $927,320; ducks, $456,235; other fowls, $9,798,925.

VALUES PER HEAD OF LIVE STOCK AND POULTRY ON HAND.

| Live Stock. | 1922 | 1921 | 1920 | 1919 | 1915 | 1910 | 1905 | 1900 |
|---|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ | $ |
| Horses (all ages)... | 109 | 109 | 127 | 129 | 139 | 128 | 110 | 76 |
| Cattle: | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. |
| Milch cows..... | 52.68 | 51.56 | 85.84 | 88.71 | 60.83 | 40.76 | 35.06 | 31.01 |
| Other cattle..... | 24.25 | 24.77 | 44.67 | 46.37 | 32.18 | 22.43 | 21.29 | 17.93 |
| Sheep and lambs... | 6.70 | 7.59 | 14.34 | 16.45 | 7.05 | 5.75 | 4.68 | 4.29 |
| Swine (all ages).... | 10.65 | 12.28 | 19.98 | 19.62 | 9.93 | 8.50 | 6.44 | 5.42 |
| Poultry (all kinds). | .88 | 1.97 | 1.07 | .97 | .54 | .43 | .34 | .29 |

The values per head of the various classes on hand June 15th, 1922, were as follows:

Horses: Stallions, $280; mares, $114.18; geldings, $110.01; colts and fillies, $59.28.

Cattle: Bulls, $68.97; calves, $11.50; steers, $37.33; all other cattle, $26.98.

Sheep and lambs: Sheep, $7.55; lambs, $5.82.

Swine: Brood sows, $29.46; all other pigs, $7.89.

Poultry: Turkeys, $3.15; geese, $2.08; ducks, $1.04; all other fowls, 77c.

VALUES PER HEAD OF LIVE STOCK AND POULTRY SOLD OR SLAUGHTERED.

| Live Stock. | 1922 | 1921 | 1920 | 1919 | 1915 | 1910 | 1905 | 1900 |
|---|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ | $ |
| Horses (all ages)... | 123 | 127 | 139 | 138 | 146 | 136 | 119 | 79 |
| | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. | $ c. |
| Cattle..... | 36.93 | 39.71 | 62.19 | 63.12 | 49.90 | 37.44 | 36.23 | 32.12 |
| Sheep and lambs... | 7.03 | 7.22 | 12.42 | 13.35 | 6.72 | 5.36 | 4.28 | 3.64 |
| Swine (all ages)... | 20.51 | 20.32 | 30.50 | 27.80 | 14.98 | 12.49 | 9.79 | 7.69 |
| Poultry (all kinds). | 1.16 | 1.23 | 1.28 | 1.13 | .62 | .51 | .39 | .37 |

## FARM LABOUR AND WAGES.

Labour conditions were thus described in the April bulletin: "Farm help can be more easily procured than in recent years, although experienced and reliable men seem to be as scarce as ever. Wages have dropped considerably, compared with last year's figures. Monthly rates offered, with board, range from $25 to $40, the majority of good workers getting from $30 to $35, or about $5 a month below the rates paid a year ago. Married men are meeting with a reduction of about $100 a year, wages now ranging from $400 to $550 a year, with house, garden, etc. One correspondent thus sums up the labour situation: 'Those hiring men must keep balance with the price of their products.' Farmers are continuing to exchange work with each other, and many would buy more of the latest farm machinery but for what several term 'the prohibitive price.' Female help on the farm is practically impossible to procure."

Comment on the May returns was as follows: "There is practically no change in the agricultural labour situation since the statement made in the April crop bulletin. Rates of wages, generally speaking, are well below what was paid a year ago, and men have been more easily procured. Many farmers, however, are trying to do without hired help, and are either exchanging work with neighbours, doing what they can within the family, or, to use a favourite expression, are 'letting things go'."

The August bulletin said: "As a rule there was a sufficiency of labour, although some farmers were hard put to get their crops harvested in reasonable time, some having to rely upon their own family help, wives and daughters, aiding in the emergency. A large number of farmers also exchanged work with their neighbours. It was thought early in the season that wages would be considerably lower than last year, but rates stiffened with the haying, and during the grain harvest were nearly the same as last year. Wages by the day ranged from $2 to $3.50, with board, chiefly around $2.50 to $3. By the month $25 to $45, with board, was the range, mainly from $30 to $35."

Working conditions at the close of the active season were referred to in the December bulletin as follows: "With a bare sufficiency of suitable labour, harvesting and other farm work have been accomplished much more satisfactorily than was expected, the remarkably open season proving of great advantage. Farmers consider the prevailing rate of wages too high at the prices now paid for agricultural products, although it is admitted that a lowering of farm wages is difficult while the towns and cities pay relatively higher for employment, and offer more attractive surroundings for the average man. A neighbourly exchange of work was made in many instances with mutual advantage. Domestic servants on the farm are almost impossible to procure. Wages by the month are now quoted at from $25 to $40, with board, and by the year at from $400 to $500, with house, etc., for married men."

## TEMPERATURE OF 1922.

TABLE I.—Showing for each month the highest, lowest, mean daily range and mean temperature at the principal stations in Ontario for 1922; also the annual mean for each station.

| Months. | Southampton. | Chatham. | London. | Woodstock. | Stoney Creek. | Toronto. | Lindsay. | Beatrice. | Ottawa. | Montreal River. |
|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| January: | | | | | | | | | | |
| Highest | 40.5 | 52.0 | 46.0 | 45.0 | 47.0 | 45.7 | 42.0 | 39.0 | 40.0 | 39.0 |
| Lowest | —14.4 | — 2.0 | — 2.0 | — 1.0 | 1.0 | — 1.4 | —17.0 | —28.0 | —17.0 | —36.0 |
| Daily range | 15.5 | 16.8 | 17.9 | 14.3 | 15.0 | 13.7 | 21.2 | 22.1 | 16.6 | 28.1 |
| Monthly mean | 18.1 | 23.9 | 21.0 | 19.6 | 23.2 | 23.2 | 14.4 | 12.4 | 8.3 | 3.6 |
| February: | | | | | | | | | | |
| Highest | 38.0 | 55.0 | 52.0 | 50.0 | 50.0 | 47.6 | 41.4 | 39.0 | 35.5 | 40.0 |
| Lowest | — 9.7 | 3.0 | — 4.0 | — 3.0 | — 2.0 | — 7.0 | —21.8 | —35.0 | —30.5 | —39.0 |
| Daily range | 15.0 | 13.5 | 15.2 | 12.9 | 13.7 | 14.8 | 19.5 | 21.9 | 22.7 | 32.5 |
| Monthly mean | 14.7 | 28.3 | 25.3 | 23.3 | 26.8 | 26.5 | 19.0 | 15.2 | 7.6 | 8.4 |
| March: | | | | | | | | | | |
| Highest | 59.6 | 69.0 | 65.0 | 63.0 | 58.0 | 58.2 | 53.6 | 46.0 | 56.0 | 50.0 |
| Lowest | 10.8 | 16.0 | 10.0 | 10.5 | 14.0 | 13.2 | — 1.0 | — 9.0 | — 4.0 | —25.0 |
| Daily range | 15.7 | 13.8 | 18.4 | 13.9 | 13.9 | 15.0 | 19.0 | 21.1 | 17.5 | 28.6 |
| Monthly mean | 30.8 | 36.9 | 33.8 | 32.2 | 34.0 | 34.2 | 29.1 | 25.8 | 29.2 | 22.1 |
| April: | | | | | | | | | | |
| Highest | 70.8 | 79.0 | 79.0 | 74.3 | 78.0 | 77.8 | 72.6 | 64.0 | 74.0 | 63.0 |
| Lowest | 24.1 | 28.0 | 22.0 | 22.5 | 25.0 | 24.6 | 19.8 | 13.0 | 24.0 | 5.0 |
| Daily range | 16.5 | 19.0 | 22.8 | 19.0 | 17.9 | 19.1 | 21.0 | 21.1 | 21.2 | 23.8 |
| Monthly mean | 41.8 | 46.9 | 46.0 | 43.7 | 44.6 | 45.4 | 42.5 | 40.5 | 43.7 | 37.1 |
| May: | | | | | | | | | | |
| Highest | 80.5 | 88.0 | 85.0 | 81.0 | 84.0 | 80.4 | 83.1 | 82.0 | 86.0 | 84.0 |
| Lowest | 32.6 | 34.0 | 32.0 | 32.8 | 33.0 | 35.0 | 28.0 | 24.0 | 31.0 | 29.0 |
| Daily range | 19.8 | 23.3 | 26.0 | 22.6 | 21.3 | 21.6 | 29.0 | 28.2 | 23.9 | 31.2 |
| Monthly mean | 56.1 | 61.6 | 60.7 | 58.3 | 56.3 | 59.7 | 59.0 | 57.1 | 59.9 | 54.5 |
| June: | | | | | | | | | | |
| Highest | 81.5 | 90.0 | 95.0 | 86.0 | 89.0 | 91.0 | 91.8 | 86.0 | 90.5 | 97.0 |
| Lowest | 38.1 | 45.0 | 40.0 | 40.5 | 41.0 | 44.8 | 36.0 | 29.0 | 42.5 | 27.0 |
| Daily range | 18.8 | 24.5 | 25.2 | 19.1 | 19.2 | 20.8 | 24.6 | 25.9 | 19.5 | 34.2 |
| Monthly mean | 61.7 | 68.6 | 66.3 | 63.5 | 64.5 | 66.7 | 64.8 | 61.4 | 65.4 | 60.2 |
| July: | | | | | | | | | | |
| Highest | 85.2 | 93.0 | 88.0 | 84.0 | 88.0 | 87.2 | 86.5 | 86.0 | 88.5 | 87.0 |
| Lowest | 42.1 | 48.0 | 44.0 | 45.5 | 45.0 | 50.3 | 43.7 | 37.0 | 49.0 | 31.0 |
| Daily range | 18.5 | 23.2 | 24.4 | 19.7 | 20.2 | 20.7 | 25.4 | 26.3 | 23.0 | 33.4 |
| Monthly mean | 64.1 | 72.3 | 69.5 | 66.8 | 67.9 | 69.5 | 67.0 | 63.7 | 69.5 | 61.8 |
| August: | | | | | | | | | | |
| Highest | 84.2 | 96.0 | 95.0 | 88.0 | 92.0 | 93.0 | 90.6 | 86.0 | 93.0 | 92.0 |
| Lowest | 40.6 | 45.0 | 41.0 | 40.5 | 43.0 | 48.4 | 38.9 | 34.0 | 44.5 | 29.0 |
| Daily range | 17.8 | 24.2 | 25.8 | 20.9 | 21.5 | 22.2 | 27.9 | 26.4 | 23.2 | 33.6 |
| Monthly mean | 63.8 | 70.2 | 67.8 | 65.2 | 66.3 | 69.0 | 65.4 | 61.9 | 67.4 | 59.3 |
| September: | | | | | | | | | | |
| Highest | 84.8 | 95.0 | 92.0 | 86.0 | 89.0 | 92.6 | 91.0 | 82.0 | 90.0 | 90.0 |
| Lowest | 34.1 | 36.0 | 31.0 | 32.0 | 34.0 | 35.0 | 29.0 | 24.0 | 30.0 | 21.0 |
| Daily range | 18.3 | 23.9 | 25.5 | 19.3 | 20.5 | 20.3 | 25.3 | 24.7 | 25.8 | 30.5 |
| Monthly mean | 59.5 | 66.7 | 63.1 | 61.0 | 63.3 | 63.5 | 61.1 | 56.8 | 62.8 | 55.2 |
| October: | | | | | | | | | | |
| Highest | 75.1 | 85.0 | 85.0 | 80.0 | 83.0 | 83.4 | 81.1 | 77.0 | 86.5 | 82.0 |
| Lowest | 24.1 | 29.0 | 24.0 | 25.0 | 23.0 | 25.0 | 17.8 | 11.0 | 18.0 | 9.0 |
| Daily range | 15.0 | 21.8 | 20.6 | 18.0 | 18.9 | 17.3 | 21.8 | 20.7 | 19.0 | 18.0 |
| Monthly mean | 47.4 | 54.9 | 50.6 | 49.5 | 50.3 | 49.8 | 45.5 | 42.4 | 45.5 | 39.8 |
| November: | | | | | | | | | | |
| Highest | 66.0 | 68.0 | 63.0 | 60.0 | 62.0 | 60.6 | 60.1 | 58.0 | 60.5 | 56.0 |
| Lowest | 22.2 | 16.0 | 15.0 | 17.5 | 23.0 | 21.2 | 13.8 | 10.0 | 18.0 | 5.0 |
| Daily range | 11.8 | 14.4 | 13.8 | 11.6 | 13.7 | 11.9 | 13.8 | 13.4 | 12.8 | 16.0 |
| Monthly mean | 39.9 | 42.0 | 40.1 | 38.7 | 40.6 | 40.7 | 36.6 | 34.7 | 35.7 | 31.0 |
| December: | | | | | | | | | | |
| Highest | 55.1 | 58.0 | 56.0 | 56.5 | 60.0 | 60.4 | 55.4 | 52.0 | 54.0 | 44.0 |
| Lowest | 8.2 | 0.0 | 1.0 | 1.0 | 2.0 | 6.2 | — 5.5 | —10.0 | —11.0 | —27.0 |
| Daily range | 12.0 | 13.7 | 14.1 | 11.8 | 14.5 | 13.1 | 16.7 | 16.0 | 16.3 | 23.1 |
| Monthly mean | 26.3 | 28.1 | 26.5 | 25.0 | 28.3 | 28.4 | 22.7 | 20.0 | 18.4 | 9.8 |
| Annual mean | 43.7 | 50.0 | 47.6 | 45.6 | 47.2 | 48.0 | 43.9 | 41.0 | 42.8 | 36.9 |

## AVERAGE TEMPERATURE FOR FORTY-ONE YEARS.

TABLE II.—Showing for each month, the monthly average for the highest, lowest, mean daily range and mean temperature at the principal stations in Ontario, derived from the forty-one years, 1882-1922; also the annual mean at each station for the same period.

| Months. | Southampton. | Chatham. | London. | Woodstock. | Stoney Creek. | Toronto. | Lindsay. | Beatrice. | Ottawa. | Montreal River. |
|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| January: | | | | | | | | | | |
| Highest | 44.5 | 46.1 | 46.1 | 45.9 | 49.8 | 45.3 | 41.5 | 41.0 | 40.0 | 37.9 |
| Lowest | — 6.8 | — 8.1 | — 9.5 | —10.4 | — 4.6 | — 7.0 | —19.9 | —27.3 | —21.3 | —33.3 |
| Daily range | 14.7 | 12.3 | 15.4 | 16.0 | 14.4 | 14.7 | 18.0 | 20.6 | 17.9 | 23.3 |
| Monthly mean | 20.9 | 21.8 | 21.3 | 20.2 | 24.7 | 22.5 | 15.8 | 14.1 | 11.2 | 6.8 |
| February: | | | | | | | | | | |
| Highest | 43.9 | 48.5 | 46.6 | 45.5 | 48.1 | 45.2 | 41.9 | 42.1 | 40.1 | 40.9 |
| Lowest | —11.9 | — 9.6 | —10.9 | —11.4 | — 6.2 | — 7.7 | —18.2 | —27.2 | —20.5 | —33.6 |
| Daily range | 16.8 | 13.9 | 16.8 | 16.8 | 15.3 | 15.3 | 19.7 | 22.2 | 18.8 | 23.4 |
| Monthly mean | 18.8 | 20.6 | 20.3 | 19.2 | 22.7 | 21.2 | 15.5 | 13.6 | 12.5 | 9.5 |
| March: | | | | | | | | | | |
| Highest | 55.0 | 59.6 | 60.0 | 57.4 | 60.5 | 57.2 | 53.1 | 51.7 | 49.8 | 51.6 |
| Lowest | — 2.2 | 0.5 | 0.4 | — 0.3 | 5.5 | 4.3 | — 6.3 | —12.9 | — 8.1 | —22.5 |
| Daily range | 17.1 | 15.2 | 17.9 | 17.2 | 15.3 | 14.6 | 18.7 | 21.2 | 17.7 | 25.3 |
| Monthly mean | 27.3 | 30.3 | 30.2 | 28.5 | 32.6 | 30.2 | 25.8 | 22.9 | 24.4 | 20.5 |
| April: | | | | | | | | | | |
| Highest | 72.6 | 76.9 | 76.3 | 74.3 | 76.6 | 70.9 | 74.1 | 71.2 | 73.3 | 73.0 |
| Lowest | 16.3 | 18.9 | 18.6 | 17.5 | 23.0 | 21.1 | 14.4 | 10.9 | 15.5 | 6.6 |
| Daily range | 17.7 | 18.2 | 20.7 | 20.1 | 17.4 | 17.0 | 21.1 | 21.2 | 19.4 | 23.8 |
| Monthly mean | 40.5 | 43.9 | 43.5 | 42.4 | 44.3 | 42.9 | 41.7 | 39.6 | 41.4 | 38.6 |
| May: | | | | | | | | | | |
| Highest | 80.2 | 83.3 | 83.4 | 80.9 | 84.8 | 80.3 | 83.1 | 81.4 | 83.2 | 84.7 |
| Lowest | 28.5 | 29.7 | 29.4 | 29.2 | 33.1 | 32.2 | 28.1 | 26.7 | 31.2 | 19.5 |
| Daily range | 19.6 | 21.0 | 23.0 | 21.8 | 20.3 | 19.3 | 23.9 | 23.0 | 22.0 | 25.9 |
| Monthly mean | 51.2 | 55.5 | 55.5 | 53.9 | 54.9 | 54.1 | 54.2 | 52.4 | 55.1 | 52.0 |
| June: | | | | | | | | | | |
| Highest | 85.3 | 88.7 | 88.9 | 86.5 | 91.1 | 87.7 | 88.8 | 86.9 | 87.9 | 89.8 |
| Lowest | 37.5 | 38.2 | 38.1 | 38.4 | 41.7 | 42.4 | 38.5 | 35.8 | 41.7 | 33.8 |
| Daily range | 19.9 | 21.9 | 23.6 | 22.6 | 21.4 | 20.4 | 24.8 | 24.2 | 21.3 | 26.7 |
| Monthly mean | 60.6 | 64.9 | 64.9 | 63.4 | 65.3 | 64.1 | 63.7 | 62.3 | 64.5 | 61.9 |
| July: | | | | | | | | | | |
| Highest | 87.5 | 92.7 | 92.5 | 89.7 | 92.5 | 91.5 | 91.8 | 89.5 | 91.3 | 91.9 |
| Lowest | 44.0 | 44.3 | 44.1 | 44.6 | 48.4 | 48.8 | 44.2 | 42.7 | 48.2 | 40.7 |
| Daily range | 20.1 | 22.2 | 23.3 | 22.8 | 21.5 | 20.5 | 24.6 | 23.3 | 20.7 | 25.3 |
| Monthly mean | 66.5 | 69.6 | 69.5 | 67.8 | 71.4 | 69.4 | 68.1 | 66.8 | 69.0 | 65.9 |
| August: | | | | | | | | | | |
| Highest | 86.1 | 90.8 | 91.0 | 88.4 | 93.1 | 89.2 | 89.9 | 87.9 | 88.9 | 88.6 |
| Lowest | 41.8 | 42.8 | 41.0 | 41.7 | 45.8 | 46.5 | 40.4 | 38.3 | 43.8 | 37.6 |
| Daily range | 18.2 | 21.1 | 23.7 | 23.5 | 21.3 | 22.0 | 24.3 | 22.9 | 20.7 | 24.1 |
| Monthly mean | 64.7 | 67.3 | 66.8 | 65.1 | 69.0 | 66.0 | 65.6 | 64.3 | 66.0 | 62.9 |
| September: | | | | | | | | | | |
| Highest | 84.7 | 87.7 | 87.1 | 85.1 | 89.8 | 85.8 | 86.0 | 83.6 | 84.5 | 83.9 |
| Lowest | 34.5 | 34.8 | 32.2 | 32.1 | 36.4 | 36.7 | 31.7 | 30.5 | 33.3 | 29.7 |
| Daily range | 18.2 | 20.9 | 22.7 | 21.9 | 20.8 | 19.0 | 23.0 | 21.7 | 20.4 | 22.9 |
| Monthly mean | 59.2 | 61.4 | 60.8 | 59.2 | 62.8 | 60.6 | 58.4 | 57.7 | 58.3 | 55.6 |
| October: | | | | | | | | | | |
| Highest | 74.3 | 76.3 | 76.3 | 74.4 | 77.7 | 73.8 | 74.4 | 72.4 | 71.8 | 73.1 |
| Lowest | 26.0 | 25.9 | 24.0 | 24.2 | 26.7 | 27.0 | 21.8 | 21.5 | 24.6 | 18.4 |
| Daily range | 16.1 | 17.0 | 20.2 | 19.1 | 18.8 | 16.5 | 19.8 | 18.9 | 17.2 | 19.2 |
| Monthly mean | 48.4 | 49.7 | 48.6 | 47.4 | 50.9 | 48.9 | 46.4 | 45.9 | 46.0 | 43.4 |
| November: | | | | | | | | | | |
| Highest | 60.9 | 62.9 | 62.1 | 61.2 | 64.9 | 60.3 | 59.2 | 58.5 | 57.8 | 55.2 |
| Lowest | 14.6 | 14.6 | 13.4 | 12.3 | 17.6 | 15.9 | 6.7 | 6.9 | 7.6 | — 0.1 |
| Daily range | 13.2 | 12.4 | 14.7 | 14.7 | 14.0 | 12.8 | 15.0 | 14.6 | 12.2 | 14.6 |
| Monthly mean | 36.8 | 37.5 | 36.9 | 35.7 | 39.4 | 37.6 | 33.7 | 33.2 | 32.6 | 29.4 |
| December: | | | | | | | | | | |
| Highest | 49.4 | 49.5 | 52.7 | 49.4 | 53.6 | 48.9 | 45.5 | 44.9 | 42.9 | 43.4 |
| Lowest | 0.6 | 0.3 | — 1.8 | — 2.8 | — 0.5 | — 0.4 | —13.0 | —15.0 | —15.1 | —24.9 |
| Daily range | 12.6 | 10.7 | 13.5 | 13.7 | 12.9 | 12.7 | 15.9 | 17.4 | 14.9 | 18.9 |
| Monthly mean | 26.7 | 26.6 | 26.5 | 25.1 | 28.9 | 27.4 | 21.3 | 20.4 | 17.6 | 14.0 |
| Annual mean | 43.5 | 45.7 | 45.4 | 44.0 | 47.3 | 45.4 | 42.5 | 41.1 | 41.6 | 38.4 |

## RAIN AND SNOW.

TABLE III.—Summary of the total fall of rain and snow, and the number of days on which rain and snow fell in Ontario during 1922, at stations reporting the whole year, and the average for the Province.

| Stations. | Rain. | | Snow. | | Stations. | Rain. | | Snow. | |
|---|---|---|---|---|---|---|---|---|---|
| | Inches | Days | Inches | Days | | Inches | Days | Inches | Days |
| ALGOMA: | | | | | NORTHUMBERLAND: | | | | |
| Biscotasing | 19.38 | 75 | 101.4 | 66 | Healey Falls | 17.39 | 73 | 42.4 | 32 |
| Kapuskasing | 11.42 | 40 | 76.5 | 32 | OXFORD: | | | | |
| Steep Hill Falls | 18.64 | 91 | 179.9 | 82 | Woodstock | 31.76 | 97 | 18.7 | 38 |
| BRANT: | | | | | PARRY SOUND: | | | | |
| Brantford | 29.46 | 86 | 26.1 | 21 | Emsdale | 23.42 | 64 | 81.8 | 43 |
| Paris | 35.30 | 97 | 29.0 | 21 | Parry Sound | 24.14 | 90 | 134.5 | 56 |
| BRUCE: | | | | | PEEL: | | | | |
| Southampton | 27.48 | 92 | 90.5 | 62 | Alton | 25.36 | 84 | 47.1 | 44 |
| Walkerton | 26.24 | 76 | 103.0 | 50 | PERTH: | | | | |
| Wiarton | 24.40 | 66 | 137.0 | 49 | Stratford | 33.08 | 84 | 34.7 | 23 |
| CARLETON: | | | | | PETERBOROUGH: | | | | |
| Ottawa | 19.93 | 91 | 81.1 | 48 | Peterborough | 21.53 | 90 | 54.2 | 44 |
| ELGIN: | | | | | PRESCOTT: | | | | |
| Port Stanley | 25.02 | 108 | 45.3 | 38 | Vankleek Hill | 20.70 | 57 | 64.3 | 30 |
| ESSEX: | | | | | PRINCE EDWARD: | | | | |
| Harrow | 18.99 | 80 | 35.8 | 16 | Bloomfield | 20.73 | 59 | 59.2 | 23 |
| Leamington | 17.61 | 55 | 21.0 | 7 | RAINY RIVER: | | | | |
| FRONTENAC: | | | | | Fort Frances | 21.14 | 85 | 52.8 | 25 |
| Kingston | 23.56 | 100 | 37.9 | 35 | Kenora | 24.00 | 49 | 75.0 | 28 |
| GREY: | | | | | Mine Centre | 21.48 | 97 | 60.5 | 57 |
| Eugenia | 29.22 | 72 | 81.0 | 43 | Sioux Lookout | 12.60 | 46 | 60.8 | 32 |
| Meaford | 20.37 | 62 | 72.3 | 38 | RENFREW: | | | | |
| Owen Sound | 20.32 | 54 | 69.6 | 36 | Clontarf | 17.68 | 66 | 68.1 | 38 |
| HALTON: | | | | | Pembroke | 24.26 | 75 | 73.1 | 40 |
| Georgetown | 21.73 | 83 | 33.5 | 24 | Renfrew | 18.35 | 85 | 55.8 | 27 |
| HASTINGS: | | | | | SIMCOE: | | | | |
| Queensboro' | 18.96 | 76 | 70.0 | 19 | Beeton | 19.06 | 57 | 48.1 | 31 |
| Trenton | 24.83 | 71 | 62.5 | 22 | SUDBURY: | | | | |
| HURON: | | | | | Sudbury | 19.97 | 77 | 60.4 | 35 |
| Clinton | 31.06 | 80 | 29.1 | 31 | Wawaitin | 18.52 | 64 | 168.5 | 78 |
| Goderich | 28.01 | 80 | 41.9 | 30 | THUNDER BAY: | | | | |
| Lucknow | 23.73 | 48 | 57.6 | 39 | Kakabeka Falls | 21.05 | 87 | 64.4 | 32 |
| KENT: | | | | | Port Arthur | 14.59 | 67 | 50.1 | 29 |
| Chatham | 21.73 | 59 | 27.0 | 11 | Schreiber | 11.80 | 62 | 102.4 | 41 |
| LEEDS: | | | | | VICTORIA: | | | | |
| Brockville | 23.22 | 52 | 30.0 | 9 | Fenelon Falls | 22.89 | 93 | 84.7 | 47 |
| LINCOLN: | | | | | Lindsay | 21.48 | 92 | 49.6 | 38 |
| Grimsby | 29.49 | 97 | 33.8 | 21 | WATERLOO: | | | | |
| St. Catharines | 25.36 | 83 | 26.9 | 19 | Kitchener | 28.81 | 79 | 40.2 | 22 |
| MANITOULIN: | | | | | WELLAND: | | | | |
| Gore Bay | 13.94 | 62 | 105.5 | 33 | Niagara Falls | 25.72 | 82 | 45.1 | 21 |
| Providence Bay | 15.79 | 35 | 162.5 | 31 | Welland | 27.44 | 91 | 57.5 | 31 |
| MIDDLESEX: | | | | | WELLINGTON: | | | | |
| London | 29.87 | 79 | 79.2 | 33 | Guelph | 26.01 | 61 | 44.0 | 26 |
| Lucan | 25.25 | 101 | 94.8 | 41 | WENTWORTH: | | | | |
| MUSKOKA: | | | | | Stoney Creek | 23.79 | 73 | 26.0 | 15 |
| Beatrice | 21.64 | 67 | 85.0 | 31 | YORK: | | | | |
| South Falls | 25.96 | 81 | 117.6 | 46 | Toronto | 24.06 | 117 | 50.4 | 43 |
| NIPISSING: | | | | | Wexford | 19.64 | 76 | 26.3 | 18 |
| Algonquin Park | 21.51 | 63 | 89.0 | 43 | | | | | |
| Iroquois Falls | 21.49 | 87 | 109.4 | 81 | Average for the | | | | |
| Montreal River | 20.58 | 90 | 105.5 | 62 | Province: 1922 | 22.65 | 60 | 63.2 | 49 |
| NORFOLK: | | | | | 1921 | 25.52 | 79 | 54.0 | 33 |
| Port Dover | 29.02 | 93 | 43.1 | 22 | 1920 | 21.51 | 71 | 75.9 | 40 |
| Simcoe | 30.54 | 85 | 39.8 | 24 | 1882–1922 | 24.02 | 73 | 72.2 | 39 |

## RAIN AND SNOW.

TABLE IV.—Monthly summary of inches of rain and snow in precipitation in the several districts in Ontario in 1922, also the average derived from the forty-one years, 1882-1922.

| Months. | West and Southwest. | | North and Northwest. | | Centre. | | East and Northeast. | | The Province. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rain. | Snow. | Rain. | Snow. | Rain. | Snow. | Rain. | Snow. | Rain. | Snow. |
| 1922 | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. |
| January | 0.67 | 13.2 | 0.01 | 18.1 | 0.45 | 10.6 | 0.20 | 14.4 | 0.33 | 14.1 |
| February | 1.46 | 13.8 | 0.16 | 21.5 | 1.38 | 11.2 | 0.57 | 18.2 | 0.89 | 16.2 |
| March | 1.65 | 6.4 | 0.50 | 9.8 | 1.51 | 8.1 | 1.19 | 7.8 | 1.21 | 8.0 |
| April | 3.46 | 1.3 | 2.50 | 8.1 | 3.43 | 1.3 | 3.50 | 5.5 | 3.22 | 4.0 |
| May | 1.87 | ..... | 1.96 | ..... | 1.68 | ..... | 1.93 | ..... | 1.86 | ..... |
| June | 4.00 | ..... | 2.23 | ..... | 4.07 | ..... | 3.56 | ..... | 3.47 | ..... |
| July | 4.02 | ..... | 4.38 | ..... | 3.01 | ..... | 2.58 | ..... | 3.50 | ..... |
| August | 2.25 | ..... | 2.20 | ..... | 2.36 | ..... | 2.44 | ..... | 2.31 | ..... |
| September | 3.16 | ..... | 1.70 | ..... | 2.90 | ..... | 1.59 | ..... | 2.34 | ..... |
| October | 1.85 | 0.1 | 1.68 | 4.1 | 1.52 | 0.4 | 2.13 | 1.7 | 1.80 | 1.6 |
| November | 1.41 | 7.8 | 1.65 | 6.5 | 0.95 | 3.8 | 1.00 | 2.2 | 1.25 | 5.1 |
| December | 0.81 | 11.1 | 0.26 | 22.8 | 0.40 | 11.3 | 0.42 | 11.7 | 0.47 | 14.2 |
| The year | 26.61 | 53.7 | 19.23 | 90.9 | 23.66 | 46.7 | 21.11 | 61.5 | 22.65 | 63.2 |
| 1882–1922 | | | | | | | | | | |
| January | 1.15 | 15.8 | 0.61 | 23.7 | 1.02 | 16.5 | 0.89 | 19.7 | 0.92 | 18.9 |
| February | 1.11 | 13.8 | 0.40 | 19.2 | 0.87 | 14.1 | 0.59 | 16.5 | 0.74 | 15.9 |
| March | 1.41 | 8.4 | 0.92 | 12.9 | 1.32 | 9.4 | 1.17 | 11.0 | 1.20 | 10.5 |
| April | 2.14 | 2.0 | 1.59 | 3.9 | 2.06 | 2.8 | 1.72 | 3.4 | 1.88 | 3.0 |
| May | 3.09 | .... | 2.58 | ..... | 2.76 | ..... | 2.68 | 0.1 | 2.78 | ..... |
| June | 2.93 | ..... | 2.65 | ..... | 2.74 | ..... | 2.77 | ..... | 2.77 | ..... |
| July | 2.70 | ..... | 2.93 | ..... | 2.83 | ..... | 2.82 | ..... | 2.82 | ..... |
| August | 2.77 | ..... | 2.82 | ..... | 2.41 | ..... | 2.65 | ..... | 2.66 | ..... |
| September | 2.59 | ..... | 3.05 | ..... | 2.33 | ..... | 2.53 | ..... | 2.63 | ..... |
| October | 2.78 | 0.7 | 2.90 | 2.1 | 2.60 | 0.5 | 2.55 | 0.9 | 2.71 | 1.1 |
| November | 2.21 | 5.3 | 1.81 | 11.7 | 1.93 | 5.1 | 1.77 | 7.5 | 1.93 | 7.4 |
| December | 2.04 | 14.2 | 0.80 | 21.2 | 1.19 | 11.9 | 1.06 | 14.4 | 1.27 | 15.4 |
| The year | 26.92 | 60.2 | 23.06 | 94.7 | 24.06 | 60.3 | 23.20 | 73.5 | 24.31 | 72.2 |

## SUNSHINE.

TABLE V.—Monthly summary of bright sunshine at the principal stations in Ontario for 1922, showing the number of hours the sun was above the horizon, the hours of registered sunshine, the total for the year, and the average derived from the forty-one years, 1882-1922.

| Months. | Sun above horizon. | Woodstock | Toronto. | Lindsay. | Kingston. | Ottawa. | Average of five stations. | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1922 | 1921 | 1882–1922 |
| 1922 | hrs. | hrs. | hrs. | hrs. | hrs. | hrs. | hrs. | hrs. | hrs. |
| January | 285.7 | 116.8 | 102.1 | 96.9 | 109.0 | 122.4 | 109.4 | 114.6 | ..... |
| February | 291.4 | 89.2 | 109.7 | 83.1 | 102.2 | 117.8 | 100.4 | 92.1 | ..... |
| March | 369.9 | 135.5 | 173.9 | 151.4 | 156.5 | 195.7 | 162.6 | 111.7 | ..... |
| April | 406.4 | 202.8 | 203.6 | 155.2 | 186.7 | 158.4 | 181.3 | 179.4 | ..... |
| May | 461.1 | 258.2 | 253.4 | 222.0 | 247.1 | 199.4 | 236.0 | 258.3 | ..... |
| June | 465.7 | 246.5 | 265.4 | 206.0 | 211.3 | 213.1 | 228.5 | 302.4 | ..... |
| July | 470.9 | 301.5 | 317.3 | 263.8 | 286.3 | 325.0 | 298.8 | 280.2 | ..... |
| August | 434.5 | 269.0 | 285.9 | 227.1 | 238.4 | 259.5 | 256.0 | 242.2 | ..... |
| September | 376.3 | 207.9 | 223.9 | 193.9 | 210.5 | 253.8 | 218.0 | 194.8 | ..... |
| October | 340.2 | 179.1 | 175.9 | 133.5 | 165.3 | 150.3 | 160.8 | 132.9 | ..... |
| November | 286.9 | 76.6 | 61.6 | 50.6 | 55.4 | 59.2 | 60.7 | 49.1 | ..... |
| December | 274.3 | 77.9 | 86.5 | 64.7 | 75.7 | 88.9 | 78.8 | 65.0 | ..... |
| The year | 4,463.3 | 2,161.0 | 2,259.2 | 1,848.2 | 2,044.4 | 2,143.5 | 2,091.3 | 2,022.7 | ..... |
| 1882–1922 | | | | | | | | | |
| January | ..... | 66.8 | 79.7 | 76.5 | 79.5 | 89.0 | ..... | ..... | 78.3 |
| February | ..... | 91.2 | 108.1 | 100.9 | 109.6 | 111.8 | ..... | ..... | 104.3 |
| March | ..... | 127.3 | 154.7 | 146.5 | 146.7 | 154.1 | ..... | ..... | 145.9 |
| April | ..... | 167.6 | 187.5 | 178.8 | 180.0 | 190.5 | ..... | ..... | 180.9 |
| May | ..... | 212.2 | 224.0 | 207.5 | 209.6 | 212.1 | ..... | ..... | 213.1 |
| June | ..... | 251.2 | 262.1 | 236.2 | 250.0 | 240.1 | ..... | ..... | 247.9 |
| July | ..... | 274.5 | 284.5 | 253.1 | 271.1 | 259.3 | ..... | ..... | 268.5 |
| August | ..... | 234.9 | 251.0 | 224.6 | 247.5 | 241.5 | ..... | ..... | 239.9 |
| September | ..... | 178.0 | 208.6 | 185.6 | 185.7 | 176.7 | ..... | ..... | 186.9 |
| October | ..... | 144.3 | 151.9 | 127.5 | 138.1 | 132.4 | ..... | ..... | 138.8 |
| November | ..... | 76.6 | 82.5 | 69.7 | 79.0 | 82.9 | ..... | ..... | 78.2 |
| December | ..... | 55.5 | 66.1 | 56.8 | 68.5 | 66.1 | ..... | ..... | 62.6 |
| The year | ..... | 1,880.1 | 2,060.7 | 1,863.7 | 1,965.3 | 1,956.5 | ..... | ..... | 1,945.3 |

## RURAL AREA ASSESSED.

TABLE VI.—Showing by County Municipalities the rural area of Ontario as returned by Municipal assessors for 1922, also the comparative totals for the Province of the five years, 1918-1922. Only townships under municipal organization are included.

| Counties and Districts. | Acres of assessed land. | Acres cleared. | Acres of woodland. | Acres of slash land. | Acres of swamp, marsh or waste land | Per cent. cleared. |
|---|---|---|---|---|---|---|
| Algoma | 341,288 | 62,532 | 194,747 | 27,675 | 56,334 | 18.32 |
| Brant | 214,320 | 177,780 | 10,081 | 17,027 | 9,432 | 82.95 |
| Bruce | 930,714 | 580,675 | 73,916 | 155,551 | 120,572 | 62.39 |
| Carleton | 564,173 | 383,738 | 60,915 | 81,280 | 38,240 | 68.02 |
| *Cochrane | 134,664 | 11,511 | 72,953 | 22,620 | 27,580 | 8.55 |
| Dufferin | 356,274 | 283,515 | 17,560 | 25,115 | 30,084 | 79.58 |
| Dundas | 236,312 | 182,311 | 20,856 | 29,920 | 3,225 | 77.15 |
| Durham | 374,351 | 313,342 | 20,598 | 8,152 | 32,259 | 83.70 |
| Elgin | 436,154 | 364,153 | 43,357 | 24,479 | 4,165 | 83.49 |
| Essex | 420,643 | 368,322 | 16,851 | 27,151 | 8,319 | 87.56 |
| Frontenac | 682,419 | 252,180 | 83,095 | 171,129 | 176,015 | 36.95 |
| Glengarry | 288,365 | 201,489 | 50,097 | 22,544 | 14,235 | 69.87 |
| Grenville | 271,794 | 185,475 | 34,238 | 16,864 | 35,217 | 68.24 |
| Grey | 1,065,709 | 710,848 | 102,545 | 93,160 | 159,156 | 66.70 |
| Haldimand | 282,361 | 246,328 | 26,343 | 7,505 | 2,185 | 87.24 |
| Haliburton | 589,351 | 51,421 | 404,916 | 65,086 | 67,928 | 8.73 |
| Halton | 223,263 | 173,360 | 17,172 | 25,989 | 6,742 | 77.65 |
| Hastings | 1,085,667 | 427,532 | 205,371 | 276,510 | 176,254 | 39.38 |
| Huron | 799,812 | 674,278 | 45,721 | 31,378 | 48,435 | 84.30 |
| Kenora | 84,193 | 8,470 | 20,939 | 35,288 | 19,496 | 10.06 |
| Kent | 569,326 | 489,873 | 23,368 | 41,729 | 14,356 | 86.04 |
| Lambton | 660,281 | 528,825 | 61,572 | 55,880 | 14,004 | 80.09 |
| Lanark | 670,733 | 336,777 | 167,776 | 40,987 | 125,193 | 50.21 |
| Leeds | 477,881 | 278,858 | 104,498 | 39,302 | 55,223 | 58.35 |
| Lennox and Addington | 445,546 | 256,246 | 103,330 | 38,803 | 47,167 | 57.51 |
| Lincoln | 189,097 | 163,448 | 13,865 | 10,186 | 1,598 | 86.44 |
| Manitoulin | 338,093 | 49,862 | 35,636 | 91,577 | 161,018 | 14.75 |
| Middlesex | 756,706 | 673,644 | 53,856 | 16,429 | 12,777 | 89.02 |
| Muskoka | 566,945 | 71,391 | 342,411 | 66,161 | 86,982 | 12.59 |
| Nipissing | 325,802 | 69,566 | 185,129 | 15,179 | 55,928 | 21.35 |
| Norfolk | 397,081 | 283,735 | 60,270 | 30,817 | 22,259 | 71.46 |
| Northumberland | 434,760 | 352,472 | 37,629 | 18,977 | 25,682 | 81.07 |
| Ontario | 508,851 | 385,843 | 23,606 | 55,691 | 43,711 | 75.83 |
| Oxford | 471,584 | 400,097 | 31,677 | 21,853 | 17,957 | 84.84 |
| Parry Sound | 646,341 | 89,506 | 357,879 | 108,135 | 90,821 | 13.85 |
| Peel | 286,495 | 261,093 | 8,577 | 8,524 | 8,301 | 91.13 |
| Perth | 522,161 | 457,302 | 32,053 | 23,909 | 8,897 | 87.58 |
| Peterborough | 594,120 | 263,904 | 138,373 | 113,930 | 77,913 | 44.42 |
| Prescott | 292,660 | 221,952 | 27,711 | 35,129 | 7,868 | 75.84 |
| Prince Edward | 236,277 | 200,171 | 17,892 | 3,999 | 14,215 | 84.72 |
| Rainy River | 349,502 | 45,207 | 182,416 | 64,652 | 57,227 | 12.93 |
| Renfrew | 1,073,669 | 390,380 | 372,690 | 178,085 | 132,514 | 36.36 |
| Russell | 249,229 | 163,731 | 13,432 | 69,259 | 2,807 | 65.70 |
| Simcoe | 964,815 | 686,340 | 79,615 | 163,907 | 34,953 | 71.14 |
| Stormont | 247,871 | 165,875 | 31,772 | 36,806 | 13,418 | 66.92 |
| Sudbury | 384,256 | 66,360 | 134,410 | 46,172 | 137,314 | 17.27 |
| Thunder Bay | 487,309 | 45,077 | 334,929 | 63,133 | 44,170 | 9 25 |
| Timiskaming | 303,298 | 59,882 | 154,885 | 47,599 | 40,932 | 19.74 |
| Victoria | 598,554 | 294,764 | 23,473 | 187,032 | 93,285 | 49.25 |
| Waterloo | 307,232 | 254,895 | 31,573 | 5,701 | 15,063 | 82.96 |
| Welland | 225,145 | 186,070 | 14,904 | 10,474 | 13,697 | 82.64 |
| Wellington | 626,829 | 506,792 | 32,649 | 15,506 | 71,882 | 80.85 |
| Wentworth | 268,718 | 213,344 | 15,049 | 13,134 | 27,191 | 79 39 |
| York | 534,476 | 443,117 | 23,818 | 33,091 | 34,450 | 82.91 |
| The Province: | | | | | | |
| 1922 | 25,393,470 | 15,015,659 | 4,794,994 | 2,936,171 | 2,646,646 | 59.13 |
| 1921 | 25,266,826 | 15,011,254 | 4,836,196 | 2,859,357 | 2,560,019 | 59.41 |
| 1920 | 25,234,193 | 14,961,176 | 4,857,973 | 2,820,049 | 2,594,995 | 59.29 |
| 1919 | 25,118,641 | 14,897,839 | 4,900,048 | 2,756,686 | 2,564,068 | 59.31 |
| 1918 | 25,157,793 | 14,798,693 | 4,937,440 | 2,772,100 | 2,649,560 | 58.82 |

Statistics from Municipal Assessors are furnished by the Bureau of Municipal Affairs.
*Formerly in Timiskaming in which District all other statistics of following tables are included.

## FALL WHEAT AND SPRING WHEAT.

TABLE VII.—Showing by County Municipalities of Ontario the area, produce and market value of Fall Wheat and Spring Wheat for the year 1922, together with the comparative totals for the Province for 1921, and the annual averages, for various periods.

| Counties and Districts. | Fall Wheat. | | | | Spring Wheat. | | | |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Bushels. | Per acre | Market value. | Acres. | Bushels. | Per acre | Market value. |
| | | | | $ | | | | $ |
| Algoma | 477 | 12,545 | 26.3 | 13,800 | 1,283 | 25,917 | 20.2 | 28,457 |
| Brant | 17,186 | 321,378 | 18.7 | 329,091 | 16 | 251 | 15.7 | 255 |
| Bruce | 33,587 | 853,110 | 25.4 | 912,828 | 314 | 5,903 | 18.8 | 5,938 |
| Carleton | 41 | 861 | 21.0 | 947 | 6,722 | 113,602 | 16.9 | 122,349 |
| Dufferin | 5,637 | 134,724 | 23.9 | 139,574 | 1,710 | 32,148 | 18.8 | 32,341 |
| Dundas | 304 | 7,022 | 23.1 | 7,724 | 836 | 16,135 | 19.3 | 17,442 |
| Durham | 8,719 | 197,921 | 22.7 | 208,609 | 6,947 | 120,878 | 17.4 | 119,911 |
| Elgin | 34,242 | 602,659 | 17.6 | 624,355 | 132 | 2,112 | 16.0 | 2,188 |
| Essex | 47,996 | 1,161,503 | 24.2 | 1,156,857 | 497 | 8,449 | 17.0 | 8,272 |
| Frontenac | 487 | 11,104 | 22.8 | 11,559 | 841 | 14,802 | 17.6 | 15,823 |
| Glengarry | 140 | 2,520 | 18.0 | 2,772 | 3,470 | 60,725 | 17.5 | 67,283 |
| Grenville | 49 | 980 | 20.0 | 1,035 | 461 | 8,805 | 19.1 | 9,509 |
| Grey | 25,075 | 651,950 | 26.0 | 687,807 | 3,100 | 60,140 | 19.4 | 62,305 |
| Haldimand | 24,449 | 420,523 | 17.2 | 435,662 | 352 | 5,702 | 16.2 | 5,816 |
| Haliburton | 76 | 1,231 | 16.2 | 1,354 | 97 | 1,203 | 12.4 | 1,203 |
| Halton | 9,486 | 249,482 | 26.3 | 268,193 | 656 | 11,677 | 17.8 | 12,156 |
| Hastings | 3,537 | 79,936 | 22.6 | 83,693 | 1,972 | 32,735 | 16.6 | 34,110 |
| Huron | 40,048 | 973,166 | 24.3 | 1,032,529 | 675 | 13,028 | 19.3 | 13,393 |
| Kent | 89,816 | 1,850,210 | 20.6 | 1,879,813 | 1,064 | 16,279 | 15.3 | 15,953 |
| Lambton | 72,781 | 1,382,839 | 19.0 | 1,428,473 | 334 | 5,578 | 16.7 | 5,717 |
| Lanark | 763 | 12,513 | 16.4 | 13,101 | 5,394 | 86,304 | 16.0 | 93,640 |
| Leeds | 851 | 16,935 | 19.9 | 18,629 | 530 | 9,169 | 17.3 | 10,178 |
| Lennox & Add | 1,726 | 31,413 | 18.2 | 31,884 | 2,518 | 48,849 | 19.4 | 50,412 |
| Lincoln | 15,727 | 319,258 | 20.3 | 334,902 | 180 | 2,304 | 12.8 | 2,350 |
| Manitoulin | 573 | 14,325 | 25.0 | 14,841 | 1,118 | 16,882 | 15.1 | 17,304 |
| Middlesex | 68,916 | 1,219,813 | 17.7 | 1,303,980 | 35 | 585 | 16.7 | 603 |
| Muskoka | 15 | 300 | 20.0 | 309 | 114 | 1,870 | 16.4 | 1,928 |
| Nipissing | 18 | 396 | 22.0 | 436 | 826 | 14,042 | 17.0 | 15,699 |
| Norfolk | 26,378 | 437,875 | 16.6 | 448,822 | 8 | 112 | 14.0 | 111 |
| Northumberland | 8,275 | 188,670 | 22.8 | 196,594 | 5,196 | 84,175 | 16.2 | 85,774 |
| Ontario | 10,922 | 300,355 | 27.5 | 319,277 | 4,244 | 79,363 | 18.7 | 80,474 |
| Oxford | 31,433 | 710,386 | 22.6 | 753,009 | 9 | 165 | 18.3 | 172 |
| Parry Sound | 31 | 496 | 16.0 | 546 | 461 | 7,514 | 16.3 | 7,875 |
| Peel | 10,758 | 289,390 | 26.9 | 309,937 | 1,677 | 31,863 | 19.0 | 32,660 |
| Perth | 28,728 | 680,854 | 23.7 | 721,024 | 232 | 3,480 | 15.0 | 3,595 |
| Peterborough | 11,653 | 298,317 | 25.6 | 321,586 | 4,931 | 90,730 | 18.4 | 92,545 |
| Prescott | 147 | 2,646 | 18.0 | 2,778 | 2,943 | 57,389 | 19.5 | 65,423 |
| Prince Edward | 4,407 | 80,207 | 18.2 | 81,169 | 1,334 | 22,278 | 16.7 | 21,743 |
| Rainy R. & Kenora | 73 | 2,117 | 29.0 | 2,329 | 1,328 | 30,278 | 22.8 | 31,005 |
| Renfrew | 369 | 5,461 | 14.8 | 6,018 | 40,247 | 579,557 | 14.4 | 620,126 |
| Russell | 92 | 1,656 | 18.0 | 1,739 | 2,093 | 39,348 | 18.8 | 44,109 |
| Simcoe | 66,377 | 1,739,077 | 26.2 | 1,839,943 | 1,366 | 22,812 | 16.7 | 23,405 |
| Stormont | 35 | 700 | 20.0 | 770 | 1,169 | 20,691 | 17.7 | 24,829 |
| Sudbury | 53 | 1,166 | 22.0 | 1,283 | 1,243 | 25,357 | 20.4 | 27,335 |
| Thunder Bay | 5 | 100 | 20.0 | 100 | 542 | 10,894 | 20.1 | 11,286 |
| Timiskaming | 177 | 3,398 | 19.2 | 3,738 | 2,182 | 50,404 | 23.1 | 56,604 |
| Victoria | 7,053 | 167,861 | 23.8 | 174,575 | 4,237 | 72,453 | 17.1 | 71,004 |
| Waterloo | 23,093 | 487,262 | 21.1 | 519,909 | 90 | 1,080 | 12.0 | 1,135 |
| Welland | 22,399 | 407,662 | 18.2 | 431,306 | 15 | 213 | 14.2 | 222 |
| Wellington | 8,371 | 215,972 | 25.8 | 227,203 | 657 | 13,469 | 20.5 | 13,765 |
| Wentworth | 15,954 | 311,103 | 19.5 | 328,525 | 108 | 1,814 | 16.8 | 1,843 |
| York | 34,430 | 929,610 | 27.0 | 979,809 | 5,700 | 117,990 | 20.7 | 117,990 |
| The Province: | | | | | | | | |
| 1922 | 813,935 | 17,792,958 | 21.9 | 18,616,746 | 124,206 | 2,099,503 | 16.9 | 2,207,565 |
| 1921 | 621,420 | 13,667,879 | 22.0 | 15,096,980 | 152,904 | 1,907,459 | 12.5 | 2,087,264 |
| Annual Averages: | | | | | | | | |
| 1912–1921 | 656,001 | 15,264,886 | 23.3 | 22,062,175 | 198,052 | 3,609,481 | 18.2 | 6,193,730 |
| 1902–1911 | 720,272 | 16,912,017 | 23.5 | 14,142,444 | 182,335 | 2,269,976 | 17.9 | 2,655,591 |
| 1892–1901 | 930,794 | 18,688,313 | 20.1 | 12,650,091 | 356,355 | 5,405,846 | 15.2 | 3,650,840 |
| 1882–1891 | 902,846 | 18,059,235 | 20.0 | 16,250,884 | 563,547 | 8,882,998 | 15.8 | 7,959,306 |
| 1882–1922 | 802,758 | 17,239,938 | 21.5 | 16,333,480 | 320,173 | 5,214,208 | 16.3 | 5,043,957 |

## BARLEY AND OATS.

TABLE VIII.—Showing by County Municipalities of Ontario the area, produce and market value of Barley and Oats for the year 1922, together with the comparative totals for the Province for 1921, and the annual averages for various periods.

| Counties and Districts. | Barley. | | | | Oats. | | | |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Bushels. | Per acre | Market value. | Acres. | Bushels. | Per acre | Market value. |
| | | | | $ | | | | $ |
| Algoma | 1,360 | 40,936 | 30.1 | 28,164 | 14,565 | 565,122 | 38.8 | 257,696 |
| Brant | 4,735 | 149,626 | 31.6 | 89,925 | 33,293 | 1,235,170 | 37.1 | 503,949 |
| Bruce | 15,325 | 517,985 | 33.8 | 305,611 | 113,677 | 4,706,228 | 41.4 | 1,924,847 |
| Carleton | 6,456 | 189,161 | 29.3 | 127,873 | 93,884 | 3,220,221 | 34.3 | 1,423,338 |
| Dufferin | 12,546 | 402,727 | 32.1 | 228,346 | 63,892 | 2,415,118 | 37.8 | 992,613 |
| Dundas | 4,733 | 155,716 | 32.9 | 112,271 | 29,323 | 952,998 | 32.5 | 446,003 |
| Durham | 6,688 | 194,621 | 29.1 | 120,665 | 55,804 | 1,992,203 | 35.7 | 834,733 |
| Elgin | 4,601 | 148,152 | 32.2 | 91,558 | 57,027 | 2,195,540 | 38.5 | 957,255 |
| Essex | 7,465 | 226,936 | 30.4 | 121,184 | 77,475 | 3,091,253 | 39.9 | 1,187,041 |
| Frontenac | 3,487 | 91,359 | 26.2 | 57,465 | 46,552 | 1,596,734 | 34.3 | 673,822 |
| Glengarry | 4,465 | 134,397 | 30.1 | 95,691 | 45 169 | 1,522,195 | 33.7 | 712,387 |
| Grenville | 1,217 | 36,145 | 29.7 | 23,494 | 39,616 | 1,406,368 | 35.5 | 631,459 |
| Grey | 24,894 | 831,460 | 33.4 | 496,382 | 161,316 | 6,307,456 | 39.1 | 2,699,591 |
| Haldimand | 5,209 | 162,000 | 31.1 | 98,658 | 43,583 | 1,499,255 | 34.4 | 625,189 |
| Haliburton | 420 | 9,744 | 23.2 | 6,334 | 11.381 | 341,430 | 30.0 | 164,569 |
| Halton | 7,132 | 248,907 | 34.9 | 159,798 | 33,058 | 1,398,353 | 42.3 | 655,828 |
| Hastings | 19,870 | 492,776 | 24.8 | 325,232 | 94,754 | 3,079,505 | 32.5 | 1,438,129 |
| Huron | 19,377 | 689,821 | 35.6 | 414,582 | 143,292 | 6,218,873 | 43.4 | 2,674,115 |
| Kent | 9,723 | 321,831 | 33.1 | 179,260 | 79,427 | 3,343,877 | 42.1 | 1,360,958 |
| Lambton | 9,897 | 300,869 | 30.4 | 173,301 | 84,734 | 3,457,147 | 40.8 | 1,379,402 |
| Lanark | 4.235 | 130,438 | 30.8 | 90,785 | 54,372 | 1,903,020 | 35.0 | 883,001 |
| Leeds | 3,965 | 126,484 | 31.9 | 80,697 | 55,053 | 1,976,403 | 35.9 | 903,216 |
| Lennox & Add | 8,294 | 253,796 | 30.6 | 160,907 | 46,467 | 1,770,393 | 38.1 | 764,810 |
| Lincoln | 1,465 | 48,638 | 33.2 | 31,128 | 25,566 | 1,066,102 | 41.7 | 474,415 |
| Manitoulin | 1,253 | 35,460 | 28.3 | 24,822 | 7,595 | 265,825 | 35.0 | 140,621 |
| Middlesex | 9,179 | 306,579 | 33.4 | 189,772 | 118,302 | 5,004,175 | 42.3 | 2,076,733 |
| Muskoka | 380 | 10,982 | 28.9 | 7,578 | 16,579 | 560,370 | 33.8 | 297,556 |
| Nipissing | 923 | 25,290 | 27.4 | 17,197 | 18,845 | 638,846 | 33.9 | 291,314 |
| Norfolk | 2,740 | 81,652 | 29.8 | 49,808 | 45,269 | 1,471,243 | 32.5 | 657,646 |
| Northumberland | 8,153 | 244.590 | 30.0 | 151,890 | 68,504 | 2,472,994 | 36.1 | 1,075,752 |
| Ontario | 14,307 | 467,839 | 32.7 | 276,025 | 84,012 | 3,251,264 | 38.7 | 1.342,772 |
| Oxford | 7,734 | 273,784 | 35.4 | 174,400 | 78,122 | 3,078,007 | 39.4 | 1,415,883 |
| Parry Sound | 875 | 22,488 | 25.7 | 15,067 | 23,475 | 769,980 | 32.8 | 389,610 |
| Peel | 21,619 | 696,132 | 32.2 | 426,729 | 53,376 | 2,161,728 | 40.5 | 912.249 |
| Perth | 22,628 | 819,134 | 36.2 | 476,736 | 103,696 | 4.293,014 | 41.4 | 1,888,926 |
| Peterborough | 8,088 | 238,596 | 29.5 | 154,372 | 57,160 | 1,909,144 | 33.4 | 855,297 |
| Prescott | 4,666 | 128,782 | 27.6 | 91,306 | 52,252 | 1,912,423 | 36.6 | 847,203 |
| Prince Edward | 10,737 | 324,257 | 30.2 | 197,148 | 30,705 | 1,120,733 | 36.5 | 450,535 |
| Rainy R. & Kenora | 1,762 | 58,675 | 33.3 | 36,026 | 11,221 | 497,090 | 44.3 | 218,720 |
| Renfrew | 3,768 | 94,954 | 25.2 | 66,753 | 79,367 | 2,579,428 | 32.5 | 1,129,789 |
| Russell | 2,277 | 69,221 | 30.4 | 46,793 | 40,279 | 1,506,435 | 37.4 | 641,741 |
| Simcoe | 41,857 | 1,318,496 | 31.5 | 779,231 | 152,390 | 5,851,776 | 38.4 | 2,481,153 |
| Stormont | 2,327 | 71,206 | 30.6 | 50,912 | 34,573 | 1,147,824 | 33.2 | 553,251 |
| Sudbury | 1,018 | 32,474 | 31.9 | 22,732 | 17,246 | 646,725 | 37.5 | 300,727 |
| Thunder Bay | 446 | 14,718 | 33.0 | 9,213 | 8,589 | 387,364 | 45.1 | 180,512 |
| Timiskaming | 2,104 | 73,430 | 34.9 | 50,593 | 16,713 | 750,414 | 44.9 | 369.954 |
| Victoria | 10,863 | 321,545 | 29.6 | 188,104 | 70,308 | 2,439,688 | 34.7 | 1,029,548 |
| Waterloo | 7,324 | 263,664 | 36.0 | 171,645 | 60,361 | 2,468,765 | 40.9 | 1,276,352 |
| Welland | 1,157 | 35,636 | 30.8 | 21,809 | 27,862 | 1,075,473 | 38.6 | 467,831 |
| Wellington | 19,167 | 649,761 | 33.9 | 405,451 | 111,018 | 4,573,942 | 41.2 | 2,039,978 |
| Wentworth | 5,089 | 163,357 | 32.1 | 101,935 | 45,931 | 1,667,295 | 36.3 | 743,614 |
| York | 33,922 | 1,224,584 | 36.1 | 738,424 | 97,060 | 4,270,640 | 44.0 | 1,806,481 |
| The Province: | | | | | | | | |
| 1922 | 433,922 | 13,971,811 | 32.2 | 8,561,782 | 3,034,090 | 116,033,569 | 38.2 | 50,450,114 |
| 1921 | 462,176 | 10,149,353 | 22.0 | 6,665,865 | 3,094,958 | 72,575,191 | 23.4 | 36,555,194 |
| Annual Averages: | | | | | | | | |
| 1912–1921 | 565,811 | 17,044,596 | 30.1 | 14,650,272 | 2,797,677 | 101,507,145 | 36.3 | 59,382,491 |
| 1902–1911 | 711,199 | 21,709,056 | 30.5 | 10,870,736 | 2,703,900 | 98,968,442 | 36.6 | 36,309,289 |
| 1892–1901 | 498,932 | 13,100,823 | 26.3 | 5,037,346 | 2,291,902 | 79,229,462 | 34.6 | 22,119,649 |
| 1882–1891 | 743,245 | 19,349,351 | 26.0 | 10,547,091 | 1,663,205 | 58,410,603 | 35.1 | 21,017,492 |
| 1882–1922 | 625,019 | 17,707,563 | 28.3 | 10,234,542 | 2,380,510 | 85,297,319 | 35.8 | 35,091,203 |

## PEAS AND BEANS.

TABLE IX.—Showing by County Municipalities of Ontario the area, produce and market value of Peas and Beans for the year 1922, together with the comparative totals for the Province for 1921, and the annual averages for various periods.

| Counties and Districts. | Peas. | | | | Beans. | | | |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Bushels. | Per acre | Market value. | Acres. | Bushels. | Per acre | Market value. |
| | | | | $ | | | | $ |
| Algoma | 723 | 12,219 | 16.9 | 18,438 | 32 | 480 | 15.0 | 1,200 |
| Brant | 390 | 6,201 | 15.9 | 7,553 | 381 | 6,553 | 17.2 | 16,514 |
| Bruce | 6,325 | 136,620 | 21.6 | 189,082 | 241 | 3,085 | 12.8 | 8,114 |
| Carleton | 399 | 8,100 | 20.3 | 13,811 | 267 | 4,005 | 15.0 | 10,974 |
| Dufferin | 2,990 | 55,016 | 18.4 | 74,272 | 9 | 135 | 15.0 | 351 |
| Dundas | 135 | 1,890 | 14.0 | 2,835 | 115 | 2,300 | 20.0 | 6,049 |
| Durham | 8,951 | 164,698 | 18.4 | 225,801 | 432 | 6,480 | 15.0 | 16,135 |
| Elgin | 1,486 | 27,194 | 18.3 | 36,902 | 8,136 | 139,939 | 17.2 | 338,652 |
| Essex | 190 | 3,420 | 18.0 | 4,446 | 226 | 3,390 | 15.0 | 8,068 |
| Frontenac | 385 | 6,314 | 16.4 | 8,436 | 276 | 3,947 | 14.3 | 10,262 |
| Glengarry | 365 | 5,256 | 14.4 | 7,753 | 150 | 2,700 | 18.0 | 7,101 |
| Grenville | 151 | 3,231 | 21.4 | 4,927 | 188 | 3,008 | 16.0 | 8,092 |
| Grey | 6,810 | 141,648 | 20.8 | 199,299 | 181 | 2,715 | 15.0 | 6,815 |
| Haldimand | 575 | 10,178 | 17.7 | 13,903 | 80 | 1,312 | 16.4 | 3,582 |
| Haliburton | 125 | 1,725 | 13.8 | 2,588 | 41 | 820 | 20.0 | 2,460 |
| Halton | 519 | 9,913 | 19.1 | 14,047 | 21 | 210 | 10.0 | 519 |
| Hastings | 1,317 | 20,018 | 15.2 | 26,604 | 203 | 3,512 | 17.3 | 9,272 |
| Huron | 4,321 | 96,358 | 22.3 | 137,117 | 5,513 | 78,285 | 14.2 | 216,849 |
| Kent | 834 | 15,596 | 18.7 | 21,445 | 16,956 | 262,818 | 15.5 | 649,160 |
| Lambton | 576 | 9,792 | 17.0 | 12,240 | 208 | 3,245 | 15.6 | 8,113 |
| Lanark | 758 | 13,871 | 18.3 | 21,667 | 331 | 4,700 | 14.2 | 12,972 |
| Leeds | 76 | 1,117 | 14.7 | 1,633 | 132 | 2,904 | 22.0 | 6,941 |
| Lennox & Add | 896 | 15,949 | 17.8 | 22,201 | 204 | 3,162 | 15.5 | 8,063 |
| Lincoln | 155 | 2,790 | 18.0 | 3,649 | 190 | 3,230 | 17.0 | 9,012 |
| Manitoulin | 1,321 | 24,306 | 18.4 | 29,775 | 21 | 252 | 12.0 | 756 |
| Middlesex | 1,362 | 29,692 | 21.8 | 37,798 | 354 | 5,770 | 16.3 | 14,425 |
| Muskoka | 581 | 10,226 | 17.6 | 14,388 | 22 | 352 | 16.0 | 880 |
| Nipissing | 891 | 18,266 | 20.5 | 27,253 | 21 | 315 | 15.0 | 945 |
| Norfolk | 1,430 | 26,026 | 18.2 | 34,693 | 463 | 7,269 | 15.7 | 17,736 |
| Northumberland | 3,710 | 66,780 | 18.0 | 90,019 | 516 | 8,256 | 16.0 | 21,631 |
| Ontario | 4,536 | 92,081 | 20.3 | 125,598 | 215 | 2,365 | 11.0 | 7,237 |
| Oxford | 473 | 9,082 | 19.2 | 12,397 | 79 | 1,264 | 16.0 | 3,299 |
| Parry Sound | 1,160 | 21,228 | 18.3 | 34,071 | 27 | 405 | 15.0 | 1,215 |
| Peel | 1,111 | 23,664 | 21.3 | 30,811 | 45 | 720 | 16.0 | 1,980 |
| Perth | 2,817 | 59,720 | 21.2 | 77,517 | 114 | 1,368 | 12.0 | 3,283 |
| Peterborough | 3,850 | 80,465 | 20.9 | 109,674 | 222 | 3,774 | 17.0 | 9,284 |
| Prescott | 441 | 8,203 | 18.6 | 11,927 | 182 | 3,003 | 16.5 | 7,868 |
| Prince Edward | 7,348 | 135,203 | 18.4 | 171,708 | 421 | 4,926 | 11.7 | 12,512 |
| Rainy R. & Kenora | 490 | 9,212 | 18.8 | 15,163 | 40 | 400 | 10.0 | 1,200 |
| Renfrew | 9,889 | 170,091 | 17.2 | 275,888 | 621 | 9,315 | 15.0 | 26,827 |
| Russell | 403 | 7,979 | 19.8 | 14,298 | 231 | 3,234 | 14.0 | 8,602 |
| Simcoe | 6,216 | 134,266 | 21.6 | 185,556 | 194 | 3,026 | 15.6 | 7,747 |
| Stormont | 83 | 1,453 | 17.5 | 2,092 | 94 | 1,034 | 11.0 | 2,585 |
| Sudbury | 1,155 | 22,869 | 19.8 | 37,322 | 37 | 555 | 15.0 | 1,388 |
| Thunder Bay | 295 | 6,018 | 20.4 | 12,036 | 1 | 10 | 10.0 | 25 |
| Timiskaming | 1,878 | 49,204 | 26.2 | 78,972 | 35 | 700 | 20.0 | 2,100 |
| Victoria | 4,178 | 90,245 | 21.6 | 123,636 | 84 | 1,680 | 20.0 | 5,040 |
| Waterloo | 1,150 | 25,990 | 22.6 | 35,372 | 47 | 752 | 16.0 | 1,955 |
| Welland | 73 | 1,314 | 18.0 | 1,893 | 908 | 10,533 | 11.6 | 31,178 |
| Wellington | 4,586 | 88,968 | 19.4 | 124,466 | 45 | 675 | 15.0 | 1,634 |
| Wentworth | 445 | 9,212 | 20.7 | 13,357 | 51 | 765 | 15.0 | 2,058 |
| York | 4,220 | 86,088 | 20.4 | 116,391 | 396 | 7,128 | 18.0 | 18,889 |
| The Province: | | | | | | | | |
| 1922 | 105,544 | 2,076,965 | 19.7 | 2,914,720 | 39,999 | 622,781 | 15.6 | 1,579,549 |
| 1921 | 105,964 | 1,441,095 | 13.6 | 2,205,423 | 26,509 | 427,531 | 16.1 | 1,005,057 |
| Annual Averages: | | | | | | | | |
| 1912–1921 | 134,576 | 2,203,352 | 16.4 | 3,797,312 | 58,729 | 806,805 | 13.7 | 2,866,760 |
| 1902–1911 | 389,104 | 7,056,642 | 18.1 | 5,275,196 | 50,006 | 854,999 | 17.1 | 1,263,012 |
| 1892–1901 | 769,819 | 14,242,404 | 18.5 | 7,613,480 | 51,654 | 875,597 | 17.0 | 818,381 |
| 1882–1891 | 668,962 | 13,908,658 | 20.8 | 8,573,501 | 26,201 | 469,393 | 17.9 | 545,087 |
| 1882–1922 | 481,223 | 9,175,305 | 19.1 | 6,231,942 | 46,485 | 748,554 | 16.1 | 1,378,340 |

## RYE AND BUCKWHEAT.

TABLE X.—Showing by County Municipalities of Ontario the area, produce and market value of Rye and Buckwheat for the year 1922, together with the comparative totals for the Province for 1921, and the annual averages for various periods.

| Counties and Districts. | Rye. | | | | Buckwheat. | | | |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Bushels. | Per acre | Market value. | Acres. | Bushels. | Per acre | Market value. |
| | | | | $ | | | | $ |
| Algoma | 58 | 928 | 16.0 | 719 | 101 | 2,020 | 20.0 | 1,515 |
| Brant | 10,258 | 172,334 | 16.8 | 131,663 | 2,226 | 42,294 | 19.0 | 29,817 |
| Bruce | 201 | 3,618 | 18.0 | 2,815 | 4,227 | 93,417 | 22.1 | 69,315 |
| Carleton | 809 | 13,753 | 17.0 | 10,700 | 3,927 | 93,855 | 23.9 | 71,236 |
| Dufferin | 5,767 | 99,769 | 17.3 | 75,924 | 5,507 | 102,981 | 18.7 | 74,764 |
| Dundas | 669 | 10,704 | 16.0 | 9,098 | 2,244 | 51,836 | 23.1 | 38,048 |
| Durham | 13,228 | 201,066 | 15.2 | 152,810 | 9,372 | 206,184 | 22.0 | 151,958 |
| Elgin | 3,325 | 52,535 | 15.8 | 42,133 | 1,882 | 33,500 | 17.8 | 24,455 |
| Essex | 1,482 | 25,935 | 17.5 | 21,345 | 509 | 9,569 | 18.8 | 7,253 |
| Frontenac | 2,375 | 34,200 | 14.4 | 27,634 | 1,867 | 42,754 | 22.9 | 31,809 |
| Glengarry | 4 | 60 | 15.0 | 48 | 1,843 | 46,997 | 25.5 | 36,047 |
| Grenville | 714 | 12,709 | 17.8 | 10,498 | 5,914 | 140,753 | 23.8 | 103,031 |
| Grey | 398 | 7,403 | 18.6 | 5,885 | 7,379 | 164,552 | 22.3 | 120,288 |
| Haldimand | 190 | 2,736 | 14.4 | 2,167 | 1,752 | 26,806 | 15.3 | 20,105 |
| Haliburton | 97 | 1,193 | 12.3 | 970 | 599 | 11,980 | 20.0 | 9,129 |
| Halton | 529 | 8,147 | 15.4 | 7,194 | 1,394 | 27,880 | 20.0 | 22,862 |
| Hastings | 7,094 | 114,923 | 16.2 | 95,846 | 9,169 | 184,297 | 20.1 | 136,564 |
| Huron | 1,013 | 18,943 | 18.7 | 14,832 | 7,614 | 167,508 | 22.0 | 123,956 |
| Kent | 1,978 | 34,022 | 17.2 | 27,388 | 382 | 6,876 | 18.0 | 4,909 |
| Lambton | 190 | 3,002 | 15.8 | 2,402 | 143 | 2,860 | 20.0 | 2,088 |
| Lanark | 2,545 | 40,466 | 15.9 | 32,980 | 4,810 | 105,820 | 22.0 | 77,884 |
| Leeds | 1,125 | 21,375 | 19.0 | 17,357 | 3,621 | 85,094 | 23.5 | 62,034 |
| Lennox & Add | 1,701 | 26,366 | 15.5 | 20,671 | 4,117 | 87,280 | 21.2 | 63,191 |
| Lincoln | 104 | 1,716 | 16.5 | 1,363 | 278 | 5,671 | 20.4 | 4,361 |
| Manitoulin | 406 | 6,090 | 15.0 | 4,976 | 91 | 1,820 | 20.0 | 1,320 |
| Middlesex | 1,222 | 20,285 | 16.6 | 16,370 | 1,376 | 27,520 | 20.0 | 21,411 |
| Muskoka | 367 | 5,945 | 16.2 | 5,351 | 237 | 4,930 | 20.8 | 3,944 |
| Nipissing | 283 | 5,264 | 18.6 | 4,211 | 153 | 3,672 | 24.0 | 2,754 |
| Norfolk | 16,443 | 243,356 | 14.8 | 187,871 | 8,436 | 151,848 | 18.0 | 107,357 |
| Northumberland | 16,546 | 266,391 | 16.1 | 211,514 | 15,654 | 324,038 | 20.7 | 240,436 |
| Ontario | 8,273 | 145,605 | 17.6 | 109,495 | 12,030 | 268,269 | 22.3 | 192,617 |
| Oxford | 3,358 | 54,735 | 16.3 | 42,146 | 2,579 | 56,996 | 22.1 | 40,296 |
| Parry Sound | 193 | 3,686 | 19.1 | 2,993 | 214 | 4,687 | 21.9 | 3,515 |
| Peel | 3,738 | 73,265 | 19.6 | 59,345 | 2,623 | 53,509 | 20.4 | 40,613 |
| Perth | 17 | 255 | 15.0 | 196 | 1,893 | 41,646 | 22.0 | 29,319 |
| Peterborough | 5,761 | 101,970 | 17.7 | 75,764 | 4,575 | 99,278 | 21.7 | 70,388 |
| Prescott | | | | | 1,836 | 44,064 | 24.0 | 35,692 |
| Prince Edward | 5,223 | 87,224 | 16.7 | 67,250 | 7,508 | 136,646 | 18.2 | 99,068 |
| Rainy R. & Kenora | 93 | 2,018 | 21.7 | 1,530 | 29 | 580 | 20.0 | 435 |
| Renfrew | 10,234 | 165,791 | 16.2 | 134,291 | 3,636 | 69,811 | 19.2 | 52,219 |
| Russell | 73 | 1,314 | 18.0 | 1,051 | 1,211 | 29,427 | 24.3 | 23,542 |
| Simcoe | 10,995 | 180,318 | 16.4 | 136,140 | 15,902 | 359,385 | 22.6 | 257,320 |
| Stormont | 159 | 2,385 | 15.0 | 1,908 | 2,182 | 54,986 | 25.2 | 42,724 |
| Sudbury | 471 | 9,420 | 20.0 | 8,007 | 106 | 2,650 | 25.0 | 1,956 |
| Thunder Bay | 45 | 900 | 20.0 | 698 | | | | |
| Timiskaming | 362 | 7,240 | 20.0 | 5,792 | 70 | 1,680 | 24.0 | 1,260 |
| Victoria | 2,398 | 34,052 | 14.2 | 25,573 | 8,604 | 205,636 | 23.9 | 151,142 |
| Waterloo | 3,012 | 50,602 | 16.8 | 41,645 | 2,752 | 66,874 | 24.3 | 51,560 |
| Welland | 329 | 5,593 | 17.0 | 4,525 | 1,595 | 29,667 | 18.6 | 22,221 |
| Wellington | 863 | 15,103 | 17.5 | 11,931 | 8,987 | 198,613 | 22.1 | 145,385 |
| Wentworth | 1,220 | 21,106 | 17.3 | 17,159 | 1,321 | 25,627 | 19.4 | 19,733 |
| York | 4,771 | 82,538 | 17.3 | 66,938 | 11,335 | 259,572 | 22.9 | 192,602 |
| The Province: | | | | | | | | |
| 1922 | 152,709 | 2,500,354 | 16.4 | 1,959,112 | 197,812 | 4,266,215 | 21.6 | 3,137,448 |
| 1921 | 122,868 | 1,775,599 | 14.5 | 1,467,086 | 147,944 | 3,354,201 | 22.7 | 2,482,999 |
| Annual Averages: | | | | | | | | |
| 1912–1921 | 132,760 | 2,207,966 | 16.6 | 2,459,189 | 188,094 | 3,942,591 | 21.0 | 3,721,788 |
| 1902–1911 | 112,424 | 1,877,432 | 16.7 | 1,129,754 | 131,168 | 2,871,668 | 21.9 | 1,503,428 |
| 1892–1901 | 129,188 | 2,088,786 | 16.2 | 937,885 | 131,005 | 2,450,389 | 18.7 | 949,189 |
| 1882–1891 | 103,636 | 1,683,211 | 16.2 | 1,010,057 | 69,230 | 1,413,900 | 20.4 | 586,472 |
| 1882–1922 | 120,312 | 1,977,422 | 16.4 | 1,398,243 | 131,531 | 2,708,578 | 20.6 | 1,725,517 |

## FLAX AND MIXED GRAINS.

TABLE XI.—Showing by County Municipalities of Ontario the area, produce, and market value of Flax and Mixed Grains for the year 1922, together with the comparative totals for the Province for 1921, and the annual averages for various periods.

| Counties and Districts. | Flax. | | | | Mixed Grains. | | | |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Bushels. | Per Acre | Market value. | Acres. | Bushels. | Per acre | Market value. |
| | | | | $ | | | | $ |
| Algoma | 10 | 80 | 8.0 | 160 | 383 | 13,099 | 34.2 | 8,645 |
| Brant | 28 | 280 | 10.0 | 605 | 7,128 | 270,864 | 38.0 | 144,100 |
| Bruce | 425 | 4,250 | 10.0 | 9,350 | 19,393 | 787,356 | 40.6 | 438,557 |
| Carleton | 68 | 544 | 8.0 | 1,224 | 9,643 | 327,862 | 34.0 | 177,701 |
| Dufferin | 121 | 968 | 8.0 | 1,936 | 20,753 | 776,162 | 37.4 | 429,218 |
| Dundas | 21 | 210 | 10.0 | 420 | 15,744 | 557,338 | 35.4 | 331,059 |
| Durham | 28 | 280 | 10.0 | 588 | 25,105 | 868,633 | 34.6 | 443,003 |
| Elgin | 3 | 24 | 8.0 | 50 | 8,342 | 302,815 | 36.3 | 171,090 |
| Essex | ..... | ..... | ..... | ..... | 2,152 | 87,802 | 40.8 | 41,618 |
| Frontenac | 9 | 90 | 10.0 | 180 | 3,527 | 113,922 | 32.3 | 59,239 |
| Glengarry | 3 | 24 | 8.0 | 48 | 1,944 | 58,320 | 30.0 | 40,824 |
| Grenville | 42 | 420 | 10.0 | 882 | 2,443 | 94,300 | 38.6 | 53,280 |
| Grey | 507 | 5,070 | 10.0 | 11,864 | 30,738 | 1,174,192 | 38.2 | 639,935 |
| Haldimand | 96 | 960 | 10.0 | 1,920 | 5,447 | 184,109 | 33.8 | 96,289 |
| Haliburton | 17 | 170 | 10.0 | 340 | 285 | 7,980 | 28.0 | 4,788 |
| Halton | ..... | ..... | ..... | ..... | 9,676 | 374,461 | 38.7 | 227,672 |
| Hastings | 97 | 776 | 8.0 | 1,552 | 9,723 | 304,330 | 31.3 | 194,163 |
| Huron | 857 | 9,856 | 11.5 | 20,993 | 29,085 | 1,239,021 | 42.6 | 706,242 |
| Kent | ..... | ..... | ..... | ..... | 7,279 | 302,079 | 41.5 | 153,758 |
| Lambton | 153 | 1,530 | 10.0 | 3,060 | 9,511 | 390,902 | 41.1 | 213,042 |
| Lanark | 60 | 660 | 11.0 | 1,584 | 5,051 | 167,188 | 33.1 | 108,672 |
| Leeds | 6 | 48 | 8.0 | 96 | 3,535 | 122,665 | 34.7 | 65,258 |
| Lennox & Add | 39 | 390 | 10.0 | 819 | 6,991 | 276,145 | 39.5 | 150,223 |
| Lincoln | 8 | 80 | 10.0 | 160 | 2,125 | 88,613 | 41.7 | 52,636 |
| Manitoulin | 112 | 1,120 | 10.0 | 2,240 | 1,431 | 52,375 | 36.6 | 36,663 |
| Middlesex | 26 | 260 | 10.0 | 541 | 11,403 | 469,804 | 41.2 | 258,392 |
| Muskoka | 1 | 8 | 8.0 | 16 | 347 | 11,972 | 34.5 | 7,782 |
| Nipissing | 18 | 144 | 8.0 | 288 | 366 | 11,785 | 32.2 | 7,330 |
| Norfolk | 16 | 160 | 10.0 | 334 | 6,003 | 201,101 | 33.5 | 107,790 |
| Northumberland | 49 | 490 | 10.0 | 980 | 15,243 | 516,738 | 33.9 | 272,321 |
| Ontario | 98 | 980 | 10.0 | 1,960 | 33,573 | 1,319,419 | 39.3 | 723,042 |
| Oxford | 200 | 2,400 | 12.0 | 5,472 | 24,117 | 1,027,384 | 42.6 | 567,116 |
| Parry Sound | 24 | 192 | 8.0 | 384 | 935 | 31,697 | 33.9 | 20,286 |
| Peel | 7 | 70 | 10.0 | 140 | 10,836 | 413,935 | 38.2 | 236,357 |
| Perth | 96 | 1,056 | 11.0 | 2,218 | 21,778 | 921,209 | 42.3 | 509,429 |
| Peterborough | 14 | 140 | 10.0 | 280 | 4,185 | 142,290 | 34.0 | 85,943 |
| Prescott | 12 | 96 | 8.0 | 192 | 1,320 | 48,840 | 37.0 | 28,962 |
| Prince Edward | 8 | 80 | 10.0 | 160 | 4,108 | 150,764 | 36.7 | 79,151 |
| Rainy R. & Kenora | 62 | 744 | 12.0 | 1,488 | 229 | 10,626 | 46.4 | 5,642 |
| Renfrew | 99 | 990 | 10.0 | 2,376 | 3,340 | 91,182 | 27.3 | 59,268 |
| Russell | 18 | 144 | 8.0 | 288 | 2,593 | 89,199 | 34.4 | 48,346 |
| Simcoe | 307 | 4,605 | 15.0 | 10,638 | 27,605 | 1,084,877 | 39.3 | 610,786 |
| Stormont | 4 | 32 | 8.0 | 64 | 3,455 | 108,487 | 31.4 | 70,517 |
| Sudbury | 66 | 528 | 8.0 | 1,056 | 604 | 23,677 | 39.2 | 14,206 |
| Thunder Bay | ..... | ..... | ..... | ..... | 621 | 27,945 | 45.0 | 15,090 |
| Timiskaming | 25 | 250 | 10.0 | 500 | 551 | 25,015 | 45.4 | 15,559 |
| Victoria | 28 | 280 | 10.0 | 560 | 15,260 | 535,626 | 35.1 | 288,702 |
| Waterloo | 39 | 390 | 10.0 | 862 | 27,058 | 1,117,495 | 41.3 | 695,082 |
| Welland | 22 | 220 | 10.0 | 660 | 2,026 | 70,505 | 34.8 | 39,483 |
| Wellington | 397 | 3,970 | 10.0 | 8,734 | 55,087 | 2,186,954 | 39.7 | 1,137,216 |
| Wentworth | 9 | 90 | 10.0 | 180 | 12,334 | 432,923 | 35.1 | 246,766 |
| York | 201 | 2,513 | 12.5 | 5,604 | 29,988 | 1,256,497 | 41.9 | 743,846 |
| The Province: | | | | | | | | |
| 1922 | 4,556 | 48,662 | 10.7 | 106,046 | 552,399 | 21,270,479 | 38.5 | 11,882,085 |
| 1921 | 7,534 | 66,748 | 8.9 | 130,995 | 618,289 | 16,188,510 | 26.2 | 10,579,352 |
| Annual Averages: | | | | | | | | |
| 1912–1921 | 9,940 | ..... | ..... | ..... | 524,500 | 19,031,019 | 36.3 | 15,645,948 |
| 1907–1911 | 10,652 | ..... | ..... | ..... | 471,545 | 15,772,739 | 33.4 | 8,674,687 |
| 1907–1922 | 9,826 | ..... | ..... | ..... | 509,695 | 18,152,773 | 35.6 | 13,232,188 |

No estimates of yields of flax were made previous to 1918. The average for the five years, 1918–1922, was 12,557 acres, yielding 133,197 bushels, valued at $529,683.

## CORN.*

TABLE XII.—Showing by County Municipalities of Ontario the area, produce, and market value of Corn for husking and for fodder for the year 1922, together with the comparative totals for the Province for 1921, and the annual averages for various periods.

| Counties and Districts. | Corn for Husking. | | | | Corn for Silo. | | | |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Bushels. (in the ear) | Per acre | Market value. | Acres. | Tons green. | Per acre. | Market value |
| | | | | $ | | | | $ |
| Algoma | 119 | 4,760 | 40.0 | 2 475 | 241 | 1,928 | 8.00 | 7,712 |
| Brant | 3,744 | 267,696 | 71.5 | 141,076 | 8,313 | 77,477 | 9.32 | 309,908 |
| Bruce | 499 | 24,950 | 50.0 | 13,797 | 9,206 | 82,486 | 8.96 | 329,944 |
| Carleton | 1,312 | 98,400 | 75.0 | 62,976 | 20,650 | 265,972 | 12.88 | 1,063,888 |
| Dufferin | 168 | 8,400 | 50.0 | 4,570 | 1,044 | 8,007 | 7.67 | 32,028 |
| Dundas | 1,945 | 97,250 | 50.0 | 61,559 | 14,514 | 155,010 | 10.68 | 620,040 |
| Durham | 1,135 | 68,100 | 60.0 | 37,796 | 9,681 | 103,877 | 10.73 | 415,508 |
| Elgin | 16,030 | 1,256,752 | 78.4 | 635,917 | 17,726 | 191,973 | 10.83 | 767,892 |
| Essex | 75,991 | 5,532,145 | 72.8 | 2,212,858 | 6,262 | 56,358 | 9.00 | 225,432 |
| Frontenac | 1,920 | 116,736 | 60.8 | 64,905 | 7,491 | 73,291 | 9.78 | 293,164 |
| Glengarry | 1,149 | 51,705 | 45.0 | 32,316 | 7,428 | 80,222 | 10 80 | 320,888 |
| Grenville | 1,976 | 105,716 | 53.5 | 61,104 | 8,896 | 102,749 | 11 55 | 410,996 |
| Grey | 573 | 28,650 | 50.0 | 15,557 | 9,962 | 99,122 | 9.95 | 396,488 |
| Haldimand | 1,895 | 141,367 | 74.6 | 76,197 | 4,128 | 36,450 | 8.83 | 145,800 |
| Haliburton | 241 | 9,881 | 41.0 | 5,929 | 495 | 4,242 | 8.57 | 16,968 |
| Halton | 565 | 33,900 | 60.0 | 18,645 | 4,598 | 47,497 | 10.33 | 189,988 |
| Hastings | 4,794 | 263,670 | 55.0 | 162,157 | 13,230 | 109,941 | 8.31 | 439 764 |
| Huron | 1,272 | 76,320 | 60.0 | 43,197 | 11,406 | 110,980 | 9.73 | 443,920 |
| Kent | 59,027 | 4,090,571 | 69.3 | 1,799,851 | 11,573 | 99,412 | 8.59 | 397,648 |
| Lambton | 19,251 | 1,478,477 | 76.8 | 652,008 | 16,453 | 148,077 | 9.00 | 592,308 |
| Lanark | 1,424 | 71,200 | 50.0 | 38,946 | 10,812 | 122,284 | 11.31 | 489,136 |
| Leeds | 3,735 | 229,329 | 61.4 | 130,718 | 13,890 | 119 593 | 8.61 | 478,372 |
| Lennox & Add | 2,417 | 173,057 | 71.6 | 90,509 | 6,987 | 68,333 | 9.78 | 273,332 |
| Lincoln | 3,890 | 255,962 | 65.8 | 137,196 | 4,874 | 44,305 | 9.09 | 177,220 |
| Manitoulin | 61 | 1,830 | 30.0 | 1,098 | 1,006 | 7,907 | 7.86 | 31,628 |
| Middlesex | 10,577 | 776,352 | 73 4 | 398,269 | 26,815 | 266,005 | 9.92 | 1,064,020 |
| Muskoka | 292 | 11,680 | 40.0 | 6,097 | 580 | 4,814 | 8.30 | 19,256 |
| Nipissing | 78 | 3,120 | 40.0 | 1,654 | 84 | 644 | 7.67 | 2,576 |
| Norfolk | 15,843 | 1,134,359 | 71.6 | 584,195 | 10,603 | 94,473 | 8.91 | 377,892 |
| Northumberland | 3,395 | 169,750 | 50.0 | 89,119 | 10,383 | 92,616 | 8.92 | 370,464 |
| Ontario | 1,581 | 96,915 | 61.3 | 51,559 | 13,682 | 134,905 | 9.86 | 539,620 |
| Oxford | 4,129 | 307,198 | 74.4 | 168,037 | 29,216 | 306,476 | 10.49 | 1,225,904 |
| Parry Sound | 155 | 6,975 | 45.0 | 3,488 | 360 | 3,377 | 9.38 | 13,508 |
| Peel | 142 | 7,100 | 50.0 | 3,834 | 5,714 | 59,711 | 10.45 | 238,844 |
| Perth | 366 | 25,986 | 71.0 | 14,838 | 11,709 | 126,340 | 10.79 | 505,360 |
| Peterborough | 416 | 16,640 | 40.0 | 9,984 | 8,400 | 77,532 | 9.23 | 310,128 |
| Prescott | 2,229 | 122,595 | 55.0 | 72,699 | 6,803 | 62,928 | 9.25 | 251,712 |
| Prince Edward | 5,830 | 364,958 | 62.6 | 190,873 | 6,548 | 57,688 | 8.81 | 230,752 |
| Rainy R. & Kenora | 26 | 650 | 25.0 | 390 | 84 | 724 | 8.62 | 2,896 |
| Renfrew | 1,147 | 57,350 | 50.0 | 32,116 | 6,477 | 57,840 | 8.93 | 231,360 |
| Russell | 578 | 28,900 | 50.0 | 17,340 | 7,644 | 73,153 | 9.57 | 292,612 |
| Simcoe | 1,575 | 70,875 | 45.0 | 36,713 | 12,229 | 125,225 | 10.24 | 500,900 |
| Stormont | 1,401 | 77,055 | 55.0 | 46,233 | 8,308 | 94,296 | 11.35 | 377,184 |
| Sudbury | 45 | 1,350 | 30.0 | 810 | 178 | 1,157 | 6.50 | 4,628 |
| Thunder Bay | 8 | 200 | 25.0 | 100 | ..... | ..... | ..... | ..... |
| Timiskaming | 20 | 600 | 30.0 | 324 | 49 | 294 | 6.00 | 1,176 |
| Victoria | 378 | 17,010 | 45.0 | 9,356 | 7,715 | 67,892 | 8.80 | 271,568 |
| Waterloo | 714 | 42,840 | 60.0 | 24,290 | 9,312 | 117,704 | 12.64 | 470,816 |
| Welland | 6,680 | 484,968 | 72.6 | 261,883 | 6,477 | 59,200 | 9.14 | 236,800 |
| Wellington | 408 | 28,560 | 70.0 | 15,908 | 7,980 | 89,456 | 11.21 | 357,824 |
| Wentworth | 945 | 67,568 | 71.5 | 37,027 | 8,096 | 82,579 | 10.20 | 330,316 |
| York | 927 | 50,985 | 55.0 | 29,010 | 12,504 | 138,669 | 11.09 | 554,676 |
| The Province: | | | | | | | | |
| 1922 | 265,018 | 18,459,363 | 69.7 | 8,609,503 | 438,819 | 4,413,191 | 10.06 | 17,652,764 |
| 1921 | 250,684 | 20,313,661 | 81.0 | 8,012,455 | 438,343 | 5,015,082 | 11.44 | 25,075,410 |
| Annual Averages: | | | | | | | | |
| 1912–1921 | 262,989 | 18,126,041 | 68.9 | 11,287,114 | 424,672 | 4,315,930 | 10.16 | 15,936,749 |
| 1902–1911 | 325,515 | 22,988,755 | 70.6 | 8,780,681 | 236,330 | 2,731,936 | 11.56 | 5,652,083 |
| 1892–1901 | 294,076 | 21,218,057 | 72.2 | 5,314,705 | 157,611 | 1,777,533 | 11.28 | 3,555,065 |
| 1892–1922 | 293,252 | 20,702,835 | 70.6 | 8,465,629 | 278,224 | 2,989,264 | 10.74 | 8,680,379 |

*The combined average area for corn for the ten years 1882–1891 was 195,878 acres, the average value of the produce for the same period being $3,704,614. The combined average for corn for the forty-one years 1882–1922 is 479,867 acres, the average value of the produce for the same period being $13,867,619.

## POTATOES AND TURNIPS.

TABLE XIII.—Showing by County Municipalities of Ontario the area, produce, and market value of Potatoes and Turnips for the year 1922, together with the comparative totals for the Province for 1921, and the annual averages for various periods.

| Counties and Districts. | Potatoes. | | | | Turnips. | | | |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Bushels. | Per acre. | Market value. | Acres. | Bushels. | Per acre | Market value. |
| | | | | $ | | | | $ |
| Algoma | 1,402 | 135,293 | 96.5 | 94,164 | 447 | 151,980 | 340 | 30,396 |
| Brant | 3,082 | 260,737 | 84.6 | 161,396 | 2,278 | 986,374 | 433 | 197,275 |
| Bruce | 4,189 | 527,395 | 125.9 | 249,458 | 2,502 | 1,130,904 | 452 | 226,181 |
| Carleton | 4,676 | 574,213 | 122.8 | 345,102 | 903 | 288,057 | 319 | 57,611 |
| Dufferin | 6,099 | 768,474 | 126.0 | 202,877 | 2,155 | 896,480 | 416 | 179,296 |
| Dundas | 1,916 | 252,146 | 131.6 | 149,523 | 42 | 12,600 | 300 | 2,520 |
| Durham | 3,804 | 497,183 | 130.7 | 215,280 | 2,227 | 991,015 | 445 | 198,203 |
| Elgin | 2,648 | 255,532 | 96.5 | 180,150 | 134 | 42,478 | 317 | 8,495 |
| Essex | 2,536 | 186,903 | 73.7 | 142,607 | 26 | 5,200 | 200 | 1,040 |
| Frontenac | 3,220 | 357,420 | 111.0 | 191,220 | 197 | 39,400 | 200 | 7,880 |
| Glengarry | 2,156 | 279,849 | 129.8 | 158,954 | 219 | 74,460 | 340 | 14,892 |
| Grenville | 2,699 | 324,960 | 120.4 | 161,830 | 139 | 45,175 | 325 | 9,035 |
| Grey | 6,679 | 848,901 | 127.1 | 339,560 | 3,159 | 1,329,939 | 421 | 265,988 |
| Haldimand | 951 | 85,970 | 90.4 | 60,695 | 26 | 7,800 | 300 | 1,560 |
| Haliburton | 680 | 85,000 | 125.0 | 51,340 | 110 | 32,120 | 292 | 6,424 |
| Halton | 1,595 | 174,493 | 109.4 | 98,414 | 1,049 | 474,148 | 452 | 94,830 |
| Hastings | 5,505 | 635,828 | 115.5 | 326,180 | 807 | 289,713 | 359 | 57,943 |
| Huron | 3,892 | 451,861 | 116.1 | 234,064 | 3,238 | 1,437,672 | 444 | 287,534 |
| Kent | 3,433 | 337,121 | 98.2 | 225,871 | 63 | 14,805 | 235 | 2,961 |
| Lambton | 3,311 | 321,498 | 97.1 | 218,297 | 190 | 63,080 | 332 | 12,616 |
| Lanark | 2,645 | 312,904 | 118.3 | 186,491 | 526 | 172,528 | 328 | 34,506 |
| Leeds | 2,842 | 355,250 | 125.0 | 190,769 | 397 | 142,126 | 358 | 28,425 |
| Lennox & Add | 3,070 | 348,445 | 113.5 | 164,118 | 59 | 20,060 | 340 | 4,012 |
| Lincoln | 1,632 | 135,946 | 83.3 | 96,658 | 36 | 11,880 | 330 | 2,376 |
| Manitoulin | 656 | 89,282 | 136.1 | 41,338 | 174 | 60,900 | 350 | 12,180 |
| Middlesex | 6,359 | 672,146 | 105.7 | 424,124 | 1,080 | 435,240 | 403 | 87,048 |
| Muskoka | 1,174 | 168,469 | 143.5 | 100,744 | 398 | 148,056 | 372 | 29,611 |
| Nipissing | 1,493 | 212,753 | 142.5 | 114,248 | 396 | 124,740 | 315 | 24,948 |
| Norfolk | 3,244 | 311,100 | 95.9 | 185,105 | 476 | 164,696 | 346 | 32,939 |
| Northumberland | 4,311 | 499,645 | 115.9 | 215,847 | 2,844 | 1,035,216 | 364 | 207,043 |
| Ontario | 6,657 | 834,122 | 125.3 | 350,331 | 5,618 | 2,544,954 | 453 | 508,991 |
| Oxford | 2,582 | 228,249 | 88.4 | 151,329 | 3,507 | 1,725,444 | 492 | 345,089 |
| Parry Sound | 1,508 | 225,748 | 149.7 | 115,583 | 562 | 193,328 | 344 | 38,666 |
| Peel | 4,791 | 515,512 | 107.6 | 216,515 | 788 | 304,956 | 387 | 60,991 |
| Perth | 3,000 | 324,900 | 108.3 | 203,387 | 2,699 | 1,317,112 | 488 | 263,422 |
| Peterborough | 2,466 | 303,071 | 122.9 | 155,475 | 1,702 | 735,264 | 432 | 147,053 |
| Prescott | 2,439 | 343,899 | 141.0 | 187,769 | 106 | 31,800 | 300 | 6,360 |
| Prince Edward | 1,837 | 208,683 | 113.6 | 107,889 | 100 | 28,300 | 283 | 5,660 |
| Rainy R. & Kenora | 730 | 116,800 | 160.0 | 51,042 | 179 | 62,829 | 351 | 12,566 |
| Renfrew | 4,758 | 647,088 | 136.0 | 357,840 | 448 | 126,784 | 283 | 25,357 |
| Russell | 1,557 | 200,853 | 129.0 | 115,490 | 365 | 116,435 | 319 | 23,287 |
| Simcoe | 14,174 | 1,805,768 | 127.4 | 613,961 | 4,550 | 2,093,000 | 460 | 418,600 |
| Stormont | 1,604 | 199,217 | 124.2 | 118,933 | 27 | 9,720 | 360 | 1,944 |
| Sudbury | 1,647 | 231,898 | 140.8 | 131,022 | 395 | 118,500 | 300 | 23,700 |
| Thunder Bay | 2,350 | 341,220 | 145.2 | 196,202 | 349 | 132,271 | 379 | 26,454 |
| Timiskaming | 1,557 | 195,248 | 125.4 | 133,159 | 339 | 121,023 | 357 | 24,205 |
| Victoria | 2,389 | 270,674 | 113.3 | 128,570 | 2,281 | 978,549 | 429 | 195,710 |
| Waterloo | 3,076 | 347,896 | 113.1 | 216,739 | 3,503 | 1,783,027 | 509 | 356,605 |
| Welland | 2,212 | 181,163 | 81.9 | 133,155 | 58 | 20,300 | 350 | 4,060 |
| Wellington | 5,053 | 613,434 | 121.4 | 274,205 | 7,858 | 4,023,296 | 512 | 804,659 |
| Wentworth | 4,302 | 456,442 | 106.1 | 275,691 | 1,166 | 572,506 | 491 | 114,501 |
| York | 10,270 | 1,290,939 | 125.7 | 624,814 | 4,738 | 2,255,288 | 476 | 451,058 |
| The Province: | | | | | | | | |
| 1922 | 172,858 | 20,349,541 | 117.7 | 10,385,525 | 67,635 | 29,923,528 | 442 | 5,984,706 |
| 1921 | 164,096 | 15,400,142 | 93.8 | 13,589,599 | 70,715 | 24,265,547 | 343 | 6,673,025 |
| Annual Averages: | | | | | | | | |
| 1912–1921 | 159,117 | 17,993,800 | 113.1 | 16,211,660 | 89,869 | 38,378,214 | 427 | 6,596,924 |
| 1902–1911 | 153,092 | 17,355,152 | 113.4 | 8,928,246 | 123,855 | 54,987,697 | 444 | 5,498,770 |
| 1892–1901 | 164,451 | 18,304,638 | 111.3 | 6,150,629 | 147,080 | 63,424,431 | 431 | 6,342,443 |
| 1882–1891 | 155,449 | 18,840,683 | 121.2 | 8,476,165 | 104,943 | 42,981,280 | 410 | 4,298,128 |
| 1882–1922 | 158,389 | 18,177,860 | 114.8 | 9,952,501 | 115,246 | 49,454,628 | 429 | 5,691,399 |

## MANGELS AND SUGAR BEETS.

TABLE XIV.—Showing by County Municipalities of Ontario the area, produce and market value of Mangels and Sugar Beets for the year 1922, together with the comparative totals for the Province for 1921, and the annual averages for various periods.

| Counties and Districts. | Mangels. | | | | Sugar Beets. | | | |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Bushels. | Per acre | Market value. | Acres. | Bushels. | Per acre | Market value. |
| | | | | $ | | | | $ |
| Algoma | 27 | 6,750 | 250 | 1,350 | 42 | 10,500 | 250 | 2,100 |
| Brant | 977 | 451,374 | 462 | 90,275 | 87 | 28,275 | 325 | 5,655 |
| Bruce | 2,087 | 968,368 | 464 | 193,673 | 88 | 28,072 | 319 | 5,615 |
| Carleton | 323 | 88,825 | 275 | 17,765 | 196 | 44,100 | 225 | 8,820 |
| Dufferin | 432 | 219,456 | 508 | 43,891 | 128 | 38,400 | 300 | 7,680 |
| Dundas | 68 | 23,800 | 350 | 4,760 | 85 | 21,250 | 250 | 4,250 |
| Durham | 1,189 | 475,600 | 400 | 95,120 | 81 | 27,702 | 342 | 5,541 |
| Elgin | 262 | 109,778 | 419 | 21,956 | 238 | 85,204 | 358 | 17,041 |
| Essex | 337 | 143,225 | 425 | 28,645 | 1,195 | 423,030 | 354 | 84,606 |
| Frontenac | 79 | 15,800 | 200 | 3,160 | 58 | 13,340 | 230 | 2,668 |
| Glengarry | 74 | 28,120 | 380 | 5,624 | 25 | 7,750 | 310 | 1,550 |
| Grenville | 29 | 10,353 | 357 | 2,071 | 51 | 13,158 | 258 | 2,632 |
| Grey | 1,990 | 859,680 | 432 | 171,936 | 275 | 77,275 | 281 | 15,455 |
| Haldimand | 164 | 75,440 | 460 | 15,088 | 52 | 11,076 | 213 | 2,215 |
| Haliburton | 14 | 2,800 | 200 | 560 | 1 | 200 | 200 | 40 |
| Halton | 897 | 489,762 | 546 | 97,952 | 49 | 19,600 | 400 | 3,920 |
| Hastings | 90 | 31,140 | 346 | 6,228 | 121 | 24,200 | 200 | 4,840 |
| Huron | 2,798 | 1,225,524 | 438 | 245,105 | 293 | 65,046 | 222 | 13,009 |
| Kent | 446 | 206,944 | 464 | 41,389 | 11,346 | 4,311,480 | 380 | 862,296 |
| Lambton | 383 | 155,498 | 406 | 31,100 | 3,784 | 1,585,496 | 419 | 317,089 |
| Lanark | 91 | 28,574 | 314 | 5,715 | 75 | 19,650 | 262 | 3,930 |
| Leeds | 94 | 36,754 | 391 | 7,351 | 130 | 29,510 | 227 | 5,902 |
| Lennox & Add | 48 | 13,392 | 279 | 2,678 | 68 | 20,060 | 295 | 4,012 |
| Lincoln | 213 | 105,222 | 494 | 21,044 | 163 | 63,081 | 387 | 12,616 |
| Manitoulin | 46 | 14,720 | 320 | 2,944 | 20 | 5,000 | 250 | 1,000 |
| Middlesex | 975 | 425,100 | 436 | 85,020 | 340 | 114,920 | 338 | 22,984 |
| Muskoka | 39 | 14,976 | 384 | 2,995 | 28 | 8,400 | 300 | 1,680 |
| Nipissing | 16 | 6,000 | 375 | 1,200 | 24 | 6,792 | 283 | 1,358 |
| Norfolk | 298 | 144,828 | 486 | 28,966 | 162 | 39,366 | 243 | 7,873 |
| Northumberland | 468 | 184,860 | 395 | 36,972 | 64 | 25,600 | 400 | 5,120 |
| Ontario | 2,479 | 1,177,525 | 475 | 235,505 | 59 | 17,700 | 300 | 3,540 |
| Oxford | 1,727 | 942,942 | 546 | 188,588 | 67 | 26,800 | 400 | 5,360 |
| Parry Sound | 44 | 14,872 | 338 | 2,974 | 22 | 6,600 | 300 | 1,320 |
| Peel | 444 | 162,948 | 367 | 32,590 | 61 | 16,470 | 270 | 3,294 |
| Perth | 2,713 | 1,378,204 | 508 | 275,641 | 33 | 11,550 | 350 | 2,310 |
| Peterborough | 440 | 161,480 | 367 | 32,296 | 5 | 1,000 | 200 | 200 |
| Prescott | 74 | 24,050 | 325 | 4,810 | 57 | 17,100 | 300 | 3,420 |
| Prince Edward | 68 | 27,200 | 400 | 5,440 | 29 | 8,700 | 300 | 1,740 |
| Rainy R. & Kenora | 42 | 16,800 | 400 | 3,360 | 34 | 8,772 | 258 | 1,754 |
| Renfrew | 172 | 60,200 | 350 | 12,040 | 55 | 17,050 | 310 | 3,410 |
| Russell | 127 | 38,100 | 300 | 7,620 | 25 | 5,000 | 200 | 1,000 |
| Simcoe | 2,333 | 1,063,848 | 456 | 212,770 | 405 | 123,120 | 304 | 24,624 |
| Stormont | 59 | 22,479 | 381 | 4,496 | 28 | 7,196 | 257 | 1,439 |
| Sudbury | 54 | 16,200 | 300 | 3,240 | 44 | 13,200 | 300 | 2,640 |
| Thunder Bay | 34 | 12,240 | 360 | 2,448 | 20 | 5,000 | 250 | 1,000 |
| Timiskaming | 36 | 10,800 | 300 | 2,160 | 26 | 7,800 | 300 | 1,560 |
| Victoria | 620 | 296,360 | 478 | 59,272 | 22 | 7,700 | 350 | 1,540 |
| Waterloo | 2,220 | 1,090,020 | 491 | 218,004 | 36 | 10,800 | 300 | 2,160 |
| Welland | 83 | 32,204 | 388 | 6,441 | 81 | 24,300 | 300 | 4,860 |
| Wellington | 2,766 | 1,424,490 | 515 | 284,898 | 113 | 38,420 | 340 | 7,684 |
| Wentworth | 922 | 508,022 | 551 | 101,604 | 74 | 27,750 | 375 | 5,550 |
| York | 2,863 | 1,322,706 | 462 | 264,541 | 160 | 46,720 | 292 | 9,344 |
| The Province: | | | | | | | | |
| 1922 | 35,274 | 16,366,353 | 464 | 3,273,271 | 20,725 | 7,616,281 | 367 | 1,523,246 |
| 1921 | 31,225 | 11,909,854 | 381 | 3,275,210 | 28,367 | 10,712,975 | 378 | 2,946,068 |
| Annual Averages: | | | | | | | | |
| 1912–1921 | 45,147 | 19,038,931 | 422 | 2,954,339 | 23,813 | 8,931,907 | 375 | 1,845,807 |
| 1902–1911 | 70,809 | 33,245,680 | 470 | 2,659,654 | *21,132 | *8,484,719 | *402 | *1,027,108 |
| 1892–1901 | 39,984 | 17,864,726 | 447 | 1,429,178 | ..... | ..... | ..... | ..... |
| 1882–1891 | 19,546 | 8,538,096 | 437 | 683,048 | ..... | ..... | ..... | ..... |
| 1882–1922 | 43,662 | 19,591,236 | 449 | 1,964,280 | †22,782 | †8,709,934 | †382 | †1,569,804 |

*1907-11 †1907-22

## ALFALFA AND HAY AND CLOVER.

TABLE XV.—Showing by County Municipalities of Ontario the area, produce and market value of Alfalfa, Hay and Clover for the year 1922, together with the comparative totals for the Province for 1921, and the annual average for various periods.

| Counties and Districts. | Alfalfa. | | | | Hay and Clover. | | | |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Tons. | Per acre | Market value. | Acres. | Tons. | Per acre | Market value. |
| | | | | $ | | | | $ |
| Algoma | 69 | 167 | 2.42 | 2,171 | 26,684 | 45,096 | 1.69 | 606,090 |
| Brant | 4,680 | 13,666 | 2.92 | 144,586 | 36,482 | 61,655 | 1.69 | 643,062 |
| Bruce | 17,230 | 49,278 | 2.86 | 514,462 | 136,148 | 201,499 | 1.48 | 2,029,095 |
| Carleton | 1,249 | 3,297 | 2.64 | 46,158 | 107,524 | 141,932 | 1.32 | 1,972,855 |
| Dufferin | 887 | 2,484 | 2.80 | 30,131 | 70,360 | 100,615 | 1.43 | 1,141,980 |
| Dundas | 457 | 1,371 | 3.00 | 14,121 | 53,686 | 86,434 | 1.61 | 852,239 |
| Durham | 742 | 2,293 | 3.09 | 28,433 | 58,093 | 102,244 | 1.76 | 1,234,085 |
| Elgin | 1,936 | 5,653 | 2.92 | 67,440 | 79,028 | 120,123 | 1.52 | 1,375,408 |
| Essex | 6,737 | 19,672 | 2.92 | 241,375 | 56,423 | 89,148 | 1.58 | 1,035,900 |
| Frontenac | 902 | 2,544 | 2.82 | 30,096 | 86,783 | 148,399 | 1.71 | 1,770,400 |
| Glengarry | 376 | 1,128 | 3.00 | 12,408 | 63,700 | 93,639 | 1.47 | 981,337 |
| Grenville | 240 | 720 | 3.00 | 8,791 | 54,302 | 88,512 | 1.63 | 1,138,264 |
| Grey | 22,330 | 55,825 | 2.50 | 606,260 | 176,105 | 287,051 | 1.63 | 3,169,043 |
| Haldimand | 19,720 | 57,977 | 2.94 | 555,999 | 69,366 | 110,986 | 1.60 | 1,097,652 |
| Haliburton | 108 | 270 | 2.50 | 4,050 | 14,486 | 16,514 | 1.14 | 280,738 |
| Halton | 9,390 | 27,701 | 2.95 | 390,584 | 41,215 | 72,126 | 1.75 | 1,022,025 |
| Hastings | 8,407 | 22,110 | 2.63 | 252,27 | 108,137 | 176,263 | 1.63 | 2,180,373 |
| Huron | 11,896 | 32,714 | 2.75 | 341,534 | 145,371 | 225,325 | 1.55 | 2,214,945 |
| Kent | 6,203 | 18,609 | 3.00 | 219,586 | 61,364 | 103,092 | 1.68 | 1,142,259 |
| Lambton | 14,051 | 41,872 | 2.98 | 477,760 | 88,479 | 134,488 | 1.52 | 1,451,126 |
| Lanark | 697 | 1,896 | 2.72 | 28,326 | 78,206 | 121,219 | 1.55 | 1,768,585 |
| Leeds | 342 | 920 | 2.69 | 11,730 | 78,328 | 140,207 | 1.79 | 1,769,412 |
| Lennox & Add | 2,662 | 7,028 | 2.64 | 66,485 | 75,808 | 113,712 | 1.50 | 1,148,491 |
| Lincoln | 8,920 | 24,976 | 2.80 | 332,680 | 43,207 | 69,131 | 1.60 | 871,742 |
| Manitoulin | 119 | 327 | 2.75 | 4,578 | 24,091 | 34,932 | 1.45 | 525,028 |
| Middlesex | 6,715 | 19,675 | 2.93 | 251,250 | 126,090 | 189,135 | 1.50 | 2,235,576 |
| Muskoka | 5 | 10 | 2.00 | 150 | 28,031 | 31,675 | 1.13 | 554,629 |
| Nipissing | 119 | 238 | 2.00 | 3,808 | 25,485 | 28,034 | 1.10 | 484,708 |
| Norfolk | 3,433 | 9,647 | 2.81 | 110,651 | 56,072 | 91,397 | 1.63 | 1,060,205 |
| Northumberland | 3,022 | 8,401 | 2.78 | 98,628 | 73,242 | 128,174 | 1.75 | 1,523,989 |
| Ontario | 1,574 | 4,801 | 3.05 | 53,771 | 79,033 | 144,630 | 1.83 | 1,647,336 |
| Oxford | 4,777 | 14,427 | 3.02 | 183,511 | 88,530 | 150,501 | 1.70 | 1,699,156 |
| Parry Sound | 42 | 84 | 2.00 | 1,260 | 34,954 | 37,051 | 1.06 | 659,137 |
| Peel | 14,322 | 44,398 | 3.10 | 570,514 | 52,617 | 78,926 | 1.50 | 1,054,451 |
| Perth | 2,100 | 6,615 | 3.15 | 84,209 | 114,844 | 184,899 | 1.61 | 1,950,684 |
| Peterborough | 804 | 2,372 | 2.95 | 26,685 | 54,020 | 83,731 | 1.55 | 1,076,781 |
| Prescott | 155 | 388 | 2.50 | 3,880 | 73,790 | 98,879 | 1.34 | 981,868 |
| Prince Edward | 3,970 | 10,322 | 2.60 | 124,999 | 42,597 | 75,397 | 1.77 | 872,343 |
| Rainy R. & Kenora | 148 | 481 | 3.25 | 6,253 | 25,340 | 44,345 | 1.75 | 637,238 |
| Renfrew | 555 | 1,665 | 3.00 | 24,143 | 98,238 | 117,886 | 1.20 | 1,874,387 |
| Russell | 388 | 1,164 | 3.00 | 11,640 | 57,006 | 68,407 | 1.20 | 760,002 |
| Simcoe | 4,345 | 12,557 | 2.89 | 153,572 | 133,737 | 211,304 | 1.58 | 2,647,639 |
| Stormont | 228 | 627 | 2.75 | 5,643 | 49,118 | 70,730 | 1.44 | 724,275 |
| Sudbury | 456 | 1,140 | 2.50 | 18,240 | 30,144 | 31,651 | 1.05 | 533,319 |
| Thunder Bay | ..... | ..... | ..... | ..... | 23,363 | 20,559 | .88 | 369,240 |
| Timiskaming | 4 | 9 | 2.25 | 144 | 28,523 | 41,358 | 1.45 | 712,598 |
| Victoria | 921 | 2,210 | 2.40 | 27,625 | 63,891 | 94,559 | 1.48 | 1,208,464 |
| Waterloo | 4,417 | 13,693 | 3.10 | 179,652 | 56,865 | 116,005 | 2.04 | 1,501,105 |
| Welland | 3,359 | 8,565 | 2.55 | 126,591 | 56,255 | 88,883 | 1.58 | 1,230,141 |
| Wellington | 3,924 | 10,909 | 2.78 | 138,217 | 134,240 | 224,181 | 1.67 | 2,367,351 |
| Wentworth | 9,405 | 25,582 | 2.72 | 310,565 | 55,311 | 90,157 | 1.63 | 1,109,833 |
| York | 11,788 | 34,657 | 2.94 | 491,783 | 80,950 | 141,663 | 1.75 | 2,065,447 |
| The Province: | | | | | | | | |
| 1922 | 221,326 | 629,135 | 2.84 | 7,439,403 | 3,575,662 | 5,568,459 | 1.56 | 66,964,036 |
| 1921 | 177,205 | 456,378 | 2.58 | 8,023,795 | 3,551,655 | 3,954,166 | 1.11 | 76,193,216 |
| Annual Averages: | | | | | | | | |
| 1912–1921 | 168,413 | 406,540 | 2.41 | 6,422,524 | 3,347,351 | 4,709,381 | 1.41 | 74,803,560 |
| 1902–1911 | ..... | ..... | ..... | ..... | *3,072,288 | 4,722,662 | 1.54 | 47,093,908 |
| 1892–1901 | ..... | ..... | ..... | ..... | *2,520,783 | 3,650,840 | 1.45 | 29,085,813 |
| 1882–1891 | ..... | ..... | ..... | ..... | *2,290,495 | 3,102,733 | 1.35 | 32,086,445 |
| 1882–1922 | ..... | ..... | ..... | ..... | *2,872,934 | 4,198,028 | 1.46 | 48,032,340 |

*Including Alfalfa.

## CARROTS—ALL FIELD CROPS.

TABLE XVI.—Showing by County Municipalities of Ontario the area, produce and market value of Carrots and all Field Crops enumerated in Tables VII to XVI, for the year 1922, together with the comparative totals for the Province for 1921, and the annual averages for the various periods.

| Counties and Districts. | Carrots. | | | | All Field Crops. | | |
|---|---|---|---|---|---|---|---|
| | Acres. | Bushels. | Per acre | Market Value. | Acres. | Value. | Per acre. |
| | | | | $ | | $ | $ c. |
| Algoma | 33 | 6,600 | 200 | 1,320 | 48,056 | 1,106,572 | 23.03 |
| Brant | 38 | 7,600 | 200 | 1,520 | 135,322 | 2,948,225 | 21.79 |
| Bruce | 54 | 16,200 | 300 | 3,240 | 365,718 | 7,431,922 | 20.32 |
| Carleton | 122 | 21,960 | 180 | 4,392 | 259,171 | 5,539,720 | 21.37 |
| Dufferin | 5 | 1,000 | 200 | 200 | 200,210 | 3,691,992 | 18.44 |
| Dundas | 10 | 2,000 | 200 | 400 | 126,847 | 2,680,361 | 21.13 |
| Durham | 34 | 8,500 | 250 | 1,700 | 212,260 | 4,505,878 | 21.23 |
| Elgin | 26 | 8,138 | 313 | 1,628 | 237,204 | 5,364,566 | 22.62 |
| Essex | 53 | 15,900 | 300 | 3,180 | 287,552 | 6,531,727 | 22.71 |
| Frontenac | 41 | 6,150 | 150 | 1,230 | 160,500 | 3,260,952 | 20.32 |
| Glengarry | 40 | 8,000 | 200 | 1,600 | 132,720 | 2,499,523 | 18.83 |
| Grenville | 56 | 11,200 | 200 | 2,240 | 119,183 | 2,643,170 | 22.18 |
| Grey | 58 | 12,064 | 208 | 2,413 | 481,529 | 9,912,871 | 20.59 |
| Haldimand | 20 | 5,000 | 250 | 1,000 | 178,055 | 3,259,497 | 18.31 |
| Haliburton | 10 | 1,500 | 150 | 300 | 29,283 | 560,084 | 19.13 |
| Halton | 50 | 10,000 | 200 | 2,000 | 121,879 | 3,286,627 | 26.97 |
| Hastings | 61 | 12,200 | 200 | 2,440 | 288,888 | 5,777,365 | 20.00 |
| Huron | 17 | 2,550 | 150 | 510 | 431,978 | 9,178,426 | 21.25 |
| Kent | 45 | 14,625 | 325 | 2,925 | 360,959 | 8,987,430 | 24.90 |
| Lambton | 90 | 13,500 | 150 | 2,700 | 324,519 | 6,982,842 | 21.52 |
| Lanark | 18 | 2,700 | 150 | 540 | 172,813 | 3,892,461 | 22.52 |
| Leeds | 21 | 3,507 | 167 | 701 | 168,673 | 3,789,419 | 22.47 |
| Lennox and Addington | 21 | 5,250 | 250 | 1,050 | 164,093 | 3,027,868 | 18.45 |
| Lincoln | 41 | 10,168 | 248 | 2,034 | 108,774 | 2,567,542 | 23.60 |
| Manitoulin | 10 | 1,640 | 164 | 328 | 40,104 | 893,440 | 22.28 |
| Middlesex | 54 | 11,340 | 210 | 2,268 | 391,180 | 8,490,584 | 21.71 |
| Muskoka | 47 | 13,959 | 297 | 2,792 | 49,237 | 1,057,686 | 21.48 |
| Nipissing | 29 | 5,800 | 200 | 1,160 | 50,068 | 1,003,087 | 20.03 |
| Norfolk | 51 | 11,475 | 225 | 2,295 | 197,368 | 4,002,289 | 20.28 |
| Northumberland | 56 | 15,400 | 275 | 3,080 | 239,631 | 4,897,173 | 20.44 |
| Ontario | 36 | 9,900 | 275 | 1,980 | 282,929 | 6,571,130 | 23.23 |
| Oxford | 29 | 7,250 | 250 | 1,450 | 282,668 | 6,982,614 | 24.70 |
| Parry Sound | 35 | 8,050 | 230 | 1,610 | 65,077 | 1,313,108 | 20.18 |
| Peel | 44 | 7,700 | 175 | 1,540 | 184,713 | 4,233,394 | 22.92 |
| Perth | 25 | 7,500 | 300 | 1,500 | 319,488 | 7,013,594 | 21.95 |
| Peterborough | 37 | 6,697 | 181 | 1,339 | 168,729 | 3,535,074 | 20.95 |
| Prescott | 40 | 8,000 | 200 | 1,600 | 149,492 | 2,605,469 | 17.43 |
| Prince Edward | 21 | 4,200 | 200 | 840 | 132,799 | 2,720,980 | 20.49 |
| Rainy River and Kenora | 14 | 2,800 | 200 | 560 | 41,924 | 1,029,597 | 24.56 |
| Renfrew | 72 | 14,400 | 200 | 2,880 | 263,492 | 4,937,088 | 18.74 |
| Russell | 29 | 5,800 | 200 | 1,160 | 116,989 | 2,060,660 | 17.61 |
| Simcoe | 115 | 26,680 | 232 | 5,336 | 496,672 | 10,946,034 | 22.04 |
| Stormont | 16 | 2,400 | 150 | 480 | 104,870 | 2,030,279 | 19.36 |
| Sudbury | 62 | 15,500 | 250 | 3,100 | 55,024 | 1,136,711 | 20.66 |
| Thunder Bay | 65 | 13,000 | 200 | 2,600 | 36,733 | 827,004 | 22.51 |
| Timiskaming | 36 | 7,200 | 200 | 1,440 | 54,687 | 1,461,838 | 26.73 |
| Victoria | 27 | 6,750 | 250 | 1,350 | 201,257 | 3,961,339 | 19.68 |
| Waterloo | 10 | 2,000 | 200 | 400 | 205,079 | 5,765,288 | 28.11 |
| Welland | 55 | 11,000 | 200 | 2,200 | 131,646 | 3,027,259 | 23.00 |
| Wellington | 21 | 6,300 | 300 | 1,260 | 371,541 | 8,367,769 | 22.52 |
| Wentworth | 50 | 12,500 | 250 | 2,500 | 162,733 | 3,762,757 | 23.12 |
| York | 74 | 21,090 | 285 | 4,218 | 346,297 | 9,281,865 | 26.80 |
| The Province: | | | | | | | |
| 1922 | 2,124 | 472,643 | 223 | 94,529 | 10,258,613 | 223,342,150 | 21.77 |
| 1921 | 2,217 | 410,501 | 185 | 112,888 | 10,075,073 | 222,177,881 | 22.05 |
| Annual Averages: | | | | | | | |
| 1912–1921 | 2,568 | 626,100 | 244 | 118,422 | *9,785,960 | *267,211,002 | 27.31 |
| 1902–1911 | 5,243 | 1,688,002 | 322 | 211,000 | 9,233,879 | 156,824,689 | 16.98 |
| 1892–1901 | 11,163 | 3,880,538 | 348 | 485,068 | 8,494,796 | 106,139,762 | 12.49 |
| 1882–1891 | 10,243 | 3,659,347 | 351 | 457,417 | 7,517,606 | 116,195,708 | 15.48 |
| 1882–1922 | 7,222 | 2,414,939 | 334 | 312,527 | 8,794,659 | 163,098,872 | 18.55 |

*Including Flax, 1918-1921.

## PASTURE, FALLOW, ORCHARD, SMALL FRUITS.

TABLE XVII.—Showing by County Municipalities the area in Cleared Pasture, Summer Fallow, Orchards and Small Fruits in 1922, together with totals for the Province for the past five years.

| Counties and Districts. | Cleared Pasture. | Summer-fallow. | Orchard. | Small Fruits. | Total. |
|---|---|---|---|---|---|
| | Acres. | Acres. | Acres. | Acres. | Acres. |
| Algoma | 8,291 | 818 | 296 | 79 | 9,484 |
| Brant | 27,953 | 2,573 | 4,628 | 690 | 35,844 |
| Bruce | 155,927 | 15,084 | 7,440 | 355 | 178,806 |
| Carleton | 98,279 | 1,796 | 1,708 | 246 | 102,029 |
| Dufferin | 58,833 | 3,942 | 2,435 | 154 | 65,364 |
| Dundas | 42,175 | 453 | 1,921 | 196 | 44,745 |
| Durham | 66,910 | 4,238 | 7,722 | 548 | 79,418 |
| Elgin | 89,492 | 3,849 | 7,538 | 998 | 101,877 |
| Essex | 46,870 | 2,308 | 6,010 | 1,362 | 56,550 |
| Frontenac | 76,686 | 512 | 1,567 | 147 | 78,912 |
| Glengarry | 49,363 | 3 | 1,108 | 90 | 50,564 |
| Grenville | 52,942 | 1,305 | 1,360 | 135 | 55,742 |
| Grey | 158,163 | 10,315 | 10,747 | 507 | 179,732 |
| Haldimand | 39,251 | 6,139 | 4,997 | 351 | 50,738 |
| Haliburton | 15,878 | 413 | 81 | 17 | 16,389 |
| Halton | 31,370 | 4,595 | 7,148 | 981 | 44,094 |
| Hastings | 125,858 | 2,735 | 5,694 | 390 | 134,677 |
| Huron | 185,233 | 7,001 | 12,118 | 472 | 204,824 |
| Kent | 89,258 | 3,100 | 6,505 | 1,127 | 99,990 |
| Lambton | 153,047 | 4,845 | 11,708 | 834 | 170,434 |
| Lanark | 130,386 | 589 | 1,204 | 100 | 132,279 |
| Leeds | 82,854 | 324 | 1,643 | 216 | 85,037 |
| Lennox and Addington | 73,440 | 1,590 | 1,971 | 301 | 77,302 |
| Lincoln | 21,815 | 5,183 | 14,836 | 3,465 | 45,299 |
| Manitoulin | 8,647 | 436 | 192 | 13 | 9,288 |
| Middlesex | 224,772 | 7,455 | 13,214 | 1,250 | 246,691 |
| Muskoka | 17,689 | 690 | 128 | 53 | 18,560 |
| Nipissing | 11,387 | 552 | 82 | 37 | 12,058 |
| Norfolk | 45,099 | 5,949 | 8,983 | 1,841 | 61,872 |
| Northumberland | 76,539 | 2,802 | 13,747 | 682 | 93,770 |
| Ontario | 71,435 | 4,490 | 5,973 | 523 | 82,421 |
| Oxford | 88,947 | 3,534 | 8,469 | 754 | 101,704 |
| Parry Sound | 19,025 | 695 | 146 | 59 | 19,925 |
| Peel | 56,648 | 5,157 | 5,170 | 660 | 67,635 |
| Perth | 106,414 | 8,927 | 6,129 | 468 | 121,938 |
| Peterborough | 71,441 | 3,436 | 1,977 | 231 | 77,085 |
| Prescott | 53,792 | 705 | 676 | 129 | 55,302 |
| Prince Edward | 44,452 | 1,321 | 8,235 | 531 | 54,539 |
| Rainy River and Kenora | 5,924 | 477 | 12 | 22 | 6,435 |
| Renfrew | 95,957 | 1,789 | 896 | 172 | 98,814 |
| Russell | 36,237 | 224 | 558 | 83 | 37,102 |
| Simcoe | 113,846 | 26,530 | 8,710 | 850 | 149,936 |
| Stormont | 48,596 | 245 | 1,228 | 232 | 50,301 |
| Sudbury | 7,986 | 668 | 21 | 36 | 8,711 |
| Thunder Bay | 4,619 | 104 | 35 | 42 | 4,800 |
| Timiskaming | 6,571 | 586 | 29 | 23 | 7,209 |
| Victoria | 64,635 | 2,296 | 2,086 | 128 | 69,145 |
| Waterloo | 31,667 | 4,536 | 4,488 | 402 | 41,093 |
| Welland | 27,320 | 7,643 | 6,405 | 1,342 | 42,710 |
| Wellington | 94,226 | 6,132 | 5,376 | 342 | 106,076 |
| Wentworth | 29,683 | 4,872 | 7,317 | 1,830 | 43,702 |
| York | 57,205 | 12,880 | 7,247 | 746 | 78,078 |
| The Province: | | | | | |
| 1922 | 3,401,033 | 198,841 | 239,914 | 27,242 | 3,867,030 |
| 1921 | 3,401,998 | 260,277 | 242,921 | 26,175 | 3,931,371 |
| 1920 | 3,432,620 | 216,377 | 248,395 | 25,635 | 3,923,027 |
| 1919 | 3,499,802 | 276,337 | 257,006 | 25,244 | 4,058,389 |
| 1918 | 3,561,754 | 248,463 | 265,678 | 24,596 | 4,100,491 |

## MARKET PRICES.

TABLE XVIII.—The following table shows by Counties the average prices of agricultural products for 1922, together with the average price for 1921, and the annual averages for various periods.

| Counties and Districts. | Fall Wheat, per bush. | Spring Wheat, per bush. | Barley, per bush. | Oats, per bush. | Peas, per bush. | Beans, per bush. | Rye, per bush. | Buckwheat, per bush. | Corn (in ear), per bush. | Hay, per ton. | Potatoes, per bush. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | cts. | cts. | cts. | cts. | cts. | $ c. | cts. | cts. | cts. | $ c. | cts. |
| Algoma | 110.0 | 109.8 | 68.8 | 45.6 | 150.9 | 2 50 | 77.5 | 75.0 | 52.0 | 13 44 | 69.6 |
| Brant | 102.4 | 101.6 | 60.1 | 40.8 | 121.8 | 2 52 | 76.4 | 70.5 | 52.7 | 10 43 | 61.9 |
| Bruce | 107.0 | 100.6 | 59.0 | 40.9 | 138.4 | 2 63 | 77.8 | 74.2 | 55.3 | 10 07 | 47.3 |
| Carleton | 110.0 | 107.7 | 67.6 | 44.2 | 170.5 | 2 74 | 77.8 | 75.9 | 64.0 | 13 90 | 60.1 |
| Dufferin | 103.6 | 100.6 | 56.7 | 41.1 | 135.0 | 2 60 | 76.1 | 72.6 | 54.4 | 11 35 | 26.4 |
| Dundas | 110.0 | 108.1 | 72.1 | 46.8 | 150.0 | 2 63 | 85.0 | 73.4 | 63.3 | 9 86 | 59.3 |
| Durham | 105.4 | 99.2 | 62.0 | 41.9 | 137.1 | 2 49 | 76.0 | 73.7 | 55.5 | 12 07 | 43.3 |
| Elgin | 103.6 | 103.6 | 61.8 | 43.6 | 135.7 | 2 42 | 80.2 | 73.0 | 50.6 | 11 45 | 70.5 |
| Essex | 99.6 | 97.9 | 53.4 | 38.4 | 130.0 | 2 38 | 82.3 | 75.8 | 40.0 | 11 62 | 76.3 |
| Frontenac | 104.1 | 106.9 | 62.9 | 42.2 | 133.6 | 2 60 | 80.8 | 74 4 | 55.6 | 11 93 | 53.5 |
| Glengarry | 110.0 | 110.8 | 71.2 | 46.8 | 147.5 | 2 63 | 80.0 | 76.7 | 62.5 | 10 48 | 56.8 |
| Grenville | 105.6 | 108.0 | 65.0 | 44.9 | 152.5 | 2 69 | 82.6 | 73.2 | 57.8 | 12 86 | 49.8 |
| Grey | 105.5 | 103.6 | 59.7 | 42.8 | 140.7 | 2 51 | 79.5 | 73.1 | 54.3 | 11 04 | 40.0 |
| Haldimand | 103.6 | 102.0 | 60.9 | 41.7 | 136.6 | 2 73 | 79.2 | 75.0 | 53.9 | 9 89 | 70.6 |
| Haliburton | 110.0 | 100.0 | 65.0 | 48.2 | 150.0 | 3 00 | 81.3 | 76.2 | 60.0 | 17 00 | 60.4 |
| Halton | 107.5 | 104.1 | 64.2 | 46.9 | 141.7 | 2 47 | 88.3 | 82.0 | 55.0 | 14 17 | 56.4 |
| Hastings | 104.7 | 104.2 | 66.0 | 46.7 | 132.9 | 2 64 | 83.4 | 74.1 | 61.5 | 12 37 | 51.3 |
| Huron | 106.1 | 102.8 | 60.1 | 43.0 | 142.3 | 2 77 | 78.3 | 74.0 | 56.6 | 9 83 | 51.8 |
| Kent | 101.6 | 98.0 | 55.7 | 40.7 | 137.5 | 2 47 | 80.5 | 71.4 | 44.0 | 11 08 | 67.0 |
| Lambton | 103.3 | 102.5 | 57.6 | 39.9 | 125.0 | 2 50 | 80.0 | 73.0 | 44.1 | 10 79 | 67.9 |
| Lanark | 104.7 | 108.5 | 69.6 | 46 4 | 156.2 | 2 76 | 81.5 | 73.6 | 54.7 | 14 59 | 59.6 |
| Leeds | 110.0 | 111.0 | 63.8 | 45.7 | 146.2 | 2 39 | 81.2 | 72.9 | 57.0 | 12 62 | 53.7 |
| Lennox & Add | 101.5 | 103.2 | 63.4 | 43.2 | 139.2 | 2 55 | 78.4 | 72.4 | 52.3 | 10 10 | 47.1 |
| Lincoln | 104.9 | 102.0 | 64.0 | 44.5 | 130.8 | 2 79 | 79.4 | 76.9 | 53.6 | 12 61 | 71.1 |
| Manitoulin | 103.6 | 102.5 | 70.0 | 52.9 | 122.5 | 3 00 | 81.7 | 72.5 | 60.0 | 15 03 | 46.3 |
| Middlesex | 106.9 | 103.0 | 61.9 | 41.5 | 127.3 | 2 50 | 80.7 | 77.8 | 51.3 | 11 82 | 63.1 |
| Muskoka | 103.0 | 103.1 | 69.0 | 53.1 | 140.7 | 2 50 | 90.0 | 80.0 | 52.2 | 17 51 | 59.8 |
| Nipissing | 110.0 | 111.8 | 68.0 | 45.6 | 149.2 | 3 00 | 80.0 | 75.0 | 53.0 | 17 29 | 53.7 |
| Norfolk | 102.5 | 99.0 | 61.0 | 44.7 | 133.3 | 2 44 | 77.2 | 70.7 | 51.5 | 11 60 | 59.5 |
| Northumberland | 104.2 | 101.9 | 62.1 | 43.5 | 134.8 | 2 62 | 79 4 | 74.2 | 52.5 | 11 89 | 43.2 |
| Ontario | 106.3 | 101.4 | 59.0 | 41.3 | 136 4 | 3 06 | 75.2 | 71.8 | 53.2 | 11 39 | 42.0 |
| Oxford | 106.0 | 104.0 | 63.7 | 46.0 | 136.5 | 2 61 | 77.0 | 70.7 | 54.7 | 11 29 | 66.3 |
| Parry Sound | 110.0 | 104.8 | 67.0 | 50.6 | 160.5 | 3 00 | 81.2 | 75.0 | 50.0 | 17 79 | 51.2 |
| Peel | 107.1 | 102.5 | 61.3 | 42.2 | 130.2 | 2 75 | 81.0 | 75.9 | 5.40 | 13 36 | 42.0 |
| Perth | 105.9 | 103.3 | 58.2 | 44.0 | 129.8 | 2 40 | 76.7 | 70 4 | 57.1 | 10 55 | 62.6 |
| Peterborough | 107.8 | 102.0 | 64.7 | 44.8 | 136.3 | 2 46 | 74.3 | 70.9 | 60.0 | 12 86 | 51.3 |
| Prescott | 105.0 | 114.0 | 70.9 | 44.3 | 145.4 | 2 62 | ..... | 81.0 | 59.3 | 9 93 | 54.6 |
| Prince Edward | 101.2 | 97.6 | 60.8 | 40.2 | 127.0 | 2 54 | 77.1 | 72.5 | 52.3 | 11 57 | 51.7 |
| Rainy R.& Kenora | 110.0 | 102.4 | 61.4 | 44.0 | 164.6 | 3 00 | 75.8 | 75.0 | 60.0 | 14 37 | 43.7 |
| Renfrew | 110.2 | 107.0 | 70.3 | 43.8 | 162.2 | 2 88 | 81.0 | 74.8 | 56.0 | 15 90 | 55.3 |
| Russell | 105.0 | 112.1 | 67.6 | 42.6 | 179.2 | 2 66 | 80.0 | 80.0 | 60.0 | 11 11 | 57.5 |
| Simcoe | 105.8 | 102.6 | 59.1 | 42.4 | 138.2 | 2 56 | 75.5 | 71.6 | 51.8 | 12 53 | 34.0 |
| Stormont | 110.0 | 120.0 | 71.5 | 48.2 | 144.0 | 2 50 | 80.0 | 77.7 | 60.0 | 10 24 | 59.7 |
| Sudbury | 110.0 | 107.8 | 70.0 | 46.5 | 163.2 | 2 50 | 85.0 | 73.8 | 60.0 | 16 85 | 56.5 |
| Thunder Bay | 100.0 | 103.6 | 62.6 | 46.6 | 200.0 | 2 50 | 77.5 | ..... | ..... | 17 96 | 57.5 |
| Timiskaming | 110.0 | 112.3 | 68.9 | 49.3 | 160.5 | 3 00 | 80.0 | 75.0 | 54.0 | 17 23 | 68.2 |
| Victoria | 104.0 | 98.0 | 58.5 | 42.2 | 137.0 | 3 00 | 75.1 | 73.5 | 55.0 | 12 78 | 47.5 |
| Waterloo | 106.7 | 105.1 | 65.1 | 51.7 | 136.1 | 2 60 | 82.3 | 77.1 | 56.7 | 12 94 | 62.3 |
| Welland | 105.8 | 104.0 | 61.2 | 43.5 | 144.1 | 2 96 | 80.9 | 74.9 | 54.0 | 13 84 | 73.5 |
| Wellington | 105.2 | 102.2 | 62.4 | 44.6 | 139.9 | 2 42 | 79.0 | 73.2 | 55.7 | 10 56 | 44.7 |
| Wentworth | 105.6 | 101.6 | 62.4 | 44.6 | 145.0 | 2 69 | 81.3 | 77.0 | 54.8 | 12 31 | 60.4 |
| York | 105.4 | 100.0 | 60.3 | 42.3 | 135.2 | 2 65 | 81.1 | 74.2 | 56.9 | 14 58 | 48.4 |
| The Province: | | | | | | | | | | | |
| 1922 | 104.6 | 105.1 | 61.3 | 43.5 | 140.3 | 2 54 | 78.4 | 73.5 | 46.6 | 12 03 | 51.0 |
| 1921 | 110.5 | 109.4 | 65.7 | 50.4 | 153.0 | 2 35 | 82.6 | 74.0 | 39.4 | 19 27 | 88.2 |
| Annual Averages: | | | | | | | | | | | |
| 1912–1921 | 144.5 | 171.6 | 86.0 | 58.5 | 172.3 | 2 35 | 111.4 | 94.4 | 62.3 | 15 88 | 90.1 |
| 1902–1911 | 83.6 | 81.2 | 50.1 | 36.7 | 74.8 | 1 48 | 60.2 | 52.4 | 38.2 | 9 97 | 51.4 |
| 1892–1901 | 67.8 | 67.5 | 38.5 | 27.9 | 53.5 | 93 | 44.9 | 38.7 | 25.0 | 7 97 | 33.6 |
| 1882–1891 | 90.0 | 89.6 | 54.5 | 34.3 | 61.6 | 1 16 | 60.0 | 41.5 | ..... | 10 34 | 45.0 |
| 1882–1922 | 94.7 | 96.7 | 57.8 | 41.1 | 67.9 | 1 84 | 70.7 | 63.7 | *40.9 | 11 44 | 54.8 |

*Average for 31 years, 1892-1922.

HORSES AND

TABLE XIX.—Showing by County Municipalities the number and value of Horses and year ending June 15th, 1922, together with the

| Counties and Districts. | Horses all ages. | | | | Cattle. | |
|---|---|---|---|---|---|---|
| | Number on hand. | Value. | Horses sold. | | Milch cows on hand. | |
| | | | Number. | Value. | Number. | Value. |
| | | $ | | $ | | $ |
| Algoma | 3,361 | 422,140 | 276 | 34,190 | 5,939 | 347,788 |
| Brant | 9,287 | 1,033,980 | 633 | 77,089 | 15,177 | 968,900 |
| Bruce | 24,183 | 2,563,866 | 2,171 | 275,580 | 32,707 | 1,814,584 |
| Carleton | 17,758 | 2,003,596 | 1,163 | 148,242 | 44,186 | 2,044,928 |
| Dufferin | 11,880 | 1,307,535 | 897 | 110,577 | 16,297 | 932,840 |
| Dundas | 8,806 | 915,165 | 665 | 74,385 | 30,024 | 1,552,241 |
| Durham | 13,892 | 1,536,032 | 999 | 122,669 | 18,347 | 976,794 |
| Elgin | 16,179 | 1,820,672 | 1,407 | 171,928 | 31,788 | 1,897,744 |
| Essex | 19,039 | 2,127,381 | 1,569 | 200,033 | 21,224 | 1,201,278 |
| Frontenac | 10,497 | 1,036,673 | 687 | 68,402 | 31,230 | 1,257,632 |
| Glengarry | 8,768 | 919,400 | 684 | 83,016 | 30,876 | 1,367,189 |
| Grenville | 7,359 | 731,623 | 478 | 50,468 | 20,427 | 919,624 |
| Grey | 29,427 | 3,220,721 | 2,295 | 277,603 | 43,645 | 2,338,936 |
| Haldimand | 10,851 | 1,129,269 | 892 | 105,838 | 16,637 | 917,031 |
| Haliburton | 2,081 | 235,303 | 150 | 16,338 | 3,952 | 156,618 |
| Halton | 8,191 | 929,651 | 623 | 80,358 | 13,996 | 887,066 |
| Hastings | 19,162 | 1,952,248 | 1,233 | 143,153 | 48,465 | 1,964,286 |
| Huron | 30,714 | 3,390,524 | 2,887 | 374,132 | 38,114 | 2,282,266 |
| Kent | 24,144 | 2,757,161 | 2,095 | 264,251 | 24,806 | 1,444,701 |
| Lambton | 22,912 | 2,452,523 | 2,101 | 255,671 | 31,436 | 1,872,328 |
| Lanark | 11,750 | 1,254,339 | 818 | 93,854 | 26,340 | 1,120,767 |
| Leeds | 11,281 | 1,128,116 | 577 | 66,144 | 37,508 | 1,663,105 |
| Lennox & Addington | 10,673 | 1,160,880 | 736 | 91,415 | 25,604 | 1,119,919 |
| Lincoln | 7,787 | 855,587 | 540 | 66,521 | 10,331 | 634,427 |
| Manitoulin | 2,479 | 275,380 | 211 | 25,629 | 4,959 | 241,107 |
| Middlesex | 32,033 | 3,400,922 | 2,625 | 333,467 | 53,316 | 3,246,944 |
| Muskoka | 3,470 | 415,306 | 324 | 40,735 | 6,931 | 348,837 |
| Nipissing | 3,418 | 417,873 | 292 | 35,562 | 6,972 | 306,768 |
| Norfolk | 13,628 | 1,409,054 | 824 | 94,959 | 22,932 | 1,280,064 |
| Northumberland | 16,041 | 1,724,901 | 1,070 | 132,229 | 26,960 | 1,272,782 |
| Ontario | 18,878 | 2,065,850 | 1,456 | 183,880 | 26,410 | 1,505,370 |
| Oxford | 19,943 | 2,196,096 | 1,692 | 205,788 | 50,508 | 3,199,682 |
| Parry Sound | 4,371 | 544,371 | 344 | 44,034 | 8,116 | 434,044 |
| Peel | 12,227 | 1,304,322 | 1,258 | 158,340 | 19,207 | 1,160,487 |
| Perth | 22,795 | 2,381,752 | 1,951 | 241,429 | 36,351 | 2,104,359 |
| Peterborough | 11,165 | 1,138,393 | 785 | 92,575 | 22,272 | 1,002,685 |
| Prescott | 8,311 | 849,479 | 732 | 87,103 | 28,730 | 1,167,587 |
| Prince Edward | 8,491 | 886,333 | 521 | 61,065 | 16,775 | 741,455 |
| Rainy River and Kenora | 3,096 | 442,286 | 200 | 30,041 | 4,303 | 230,124 |
| Renfrew | 15,457 | 1,738,824 | 1,129 | 143,539 | 31,156 | 1,172,089 |
| Russell | 7,596 | 773,262 | 518 | 64,842 | 23,600 | 994,268 |
| Simcoe | 33,357 | 3,639,120 | 2,534 | 313,830 | 44,571 | 2,391,234 |
| Stormont | 7,779 | 799,676 | 471 | 49,715 | 28,648 | 1,265,955 |
| Sudbury | 3,192 | 395,744 | 286 | 34,211 | 6,651 | 358,223 |
| Thunder Bay | 1,909 | 279,976 | 186 | 26,904 | 4,408 | 319,977 |
| Timiskaming | 3,090 | 427,759 | 324 | 46,563 | 4,152 | 263,486 |
| Victoria | 13,264 | 1,453,560 | 975 | 120,537 | 20,626 | 1,023,875 |
| Waterloo | 13,269 | 1,419,264 | 1,090 | 130,436 | 19,872 | 1,224,711 |
| Welland | 8,274 | 880,631 | 534 | 62,844 | 12,864 | 771,840 |
| Wellington | 23,511 | 2,561,985 | 1,781 | 220,356 | 32,063 | 1,935,643 |
| Wentworth | 11,179 | 1,196,572 | 838 | 101,699 | 17,138 | 1,161,100 |
| York | 23,648 | 2,622,779 | 1,886 | 229,304 | 36,118 | 2,283,380 |
| The Province: | | | | | | |
| 1922 | 685,852 | 74,535,855 | 53,416 | 6,563,473 | 1,235,665 | 65,091,068 |
| 1921 | 694,237 | 75,680,750 | 67,940 | 8,606,379 | 1,204,270 | 62,094,883 |
| 1920 | 704,640 | 89,606,594 | 76,548 | 10,647,026 | 1,170,010 | 100,429,918 |
| 1919 | 719,569 | 92,823,683 | 78,354 | 10,811,664 | 1,141,016 | 101,218,161 |
| 1918 | 732,977 | 95,710,928 | 80,984 | 11,019,354 | 1,097,039 | 91,662,681 |

## CATTLE.

Cattle on hand June 15th, 1922, and the number and value of those sold or slaughtered in the totals for the Province for the past five years.

| Cattle. | | | | | | Counties and Districts. |
|---|---|---|---|---|---|---|
| Other Cattle on Hand. | | Total on Hand. | | Sold or Slaughtered. | | |
| Number. | Value. | Number. | Value. | Number. | Value. | |
| | $ | | $ | | $ | |
| 7,193 | 168,751 | 13,132 | 516,539 | 4,359 | 138,949 | Algoma. |
| 16,012 | 436,554 | 31,189 | 1,405,454 | 11,330 | 438,100 | Brant. |
| 76,595 | 2,119,640 | 109,302 | 3,934,224 | 30,245 | 1,476,007 | Bruce. |
| 43,272 | 850,116 | 87,458 | 2,895,044 | 26,649 | 767,309 | Carleton. |
| 32,102 | 836,583 | 48,399 | 1,769,423 | 13,004 | 602,221 | Dufferin. |
| 14,776 | 321,048 | 44,800 | 1,873,289 | 13,091 | 344,445 | Dundas. |
| 32,476 | 802,233 | 50,823 | 1,779,027 | 15,501 | 651,397 | Durham. |
| 34,600 | 976,277 | 66,388 | 2,874,021 | 22,283 | 880,816 | Elgin. |
| 20,296 | 526,665 | 41,520 | 1,727,943 | 15,708 | 573,647 | Essex. |
| 26,629 | 454,828 | 57,859 | 1,712,460 | 16,519 | 363,601 | Frontenac. |
| 17,685 | 366,483 | 48,561 | 1,733,672 | 15,400 | 280,779 | Glengarry. |
| 13,250 | 271,637 | 33,677 | 1,191,261 | 11,531 | 288,373 | Grenville. |
| 91,880 | 2,365,191 | 135,525 | 4,704,127 | 38,753 | 1,806,727 | Grey. |
| 20,540 | 489,587 | 37,177 | 1,406,618 | 12,869 | 474,806 | Haldimand. |
| 6,890 | 114,809 | 10,842 | 271,427 | 3,086 | 82,962 | Haliburton. |
| 18,978 | 507,279 | 32,974 | 1,394,345 | 11,185 | 506,808 | Halton. |
| 43,938 | 738,066 | 92,403 | 2,702,352 | 27,126 | 548,708 | Hastings. |
| 85,954 | 2,387,205 | 124,068 | 4,669,471 | 38,560 | 1,876,995 | Huron. |
| 44,413 | 1,217,376 | 69,219 | 2,662,077 | 21,595 | 967,591 | Kent. |
| 66,961 | 1,892,356 | 98,397 | 3,764,684 | 34,118 | 1,568,180 | Lambton. |
| 42,547 | 755,899 | 68,887 | 1,876,666 | 19,082 | 556,086 | Lanark. |
| 25,446 | 485,404 | 62,954 | 2,148,509 | 17,606 | 418,208 | Leeds. |
| 23,037 | 433,841 | 48,641 | 1,553,760 | 13,670 | 307,346 | Lennox and Addington. |
| 8,397 | 220,921 | 18,728 | 855,348 | 7,802 | 286,904 | Lincoln. |
| 10,209 | 209,261 | 15,168 | 450,368 | 4,323 | 130,059 | Manitoulin. |
| 88,287 | 2,576,783 | 141,603 | 5,823,727 | 46,845 | 1,984,313 | Middlesex. |
| 10,338 | 209,144 | 17,269 | 557,981 | 4,710 | 143,406 | Muskoka. |
| 10,208 | 181,213 | 17,180 | 487,981 | 4,665 | 150,052 | Nipissing. |
| 18,070 | 432,772 | 41,002 | 1,712,836 | 13,845 | 416,523 | Norfolk. |
| 32,611 | 689,814 | 59,571 | 1,962,596 | 18,211 | 573,323 | Northumberland. |
| 45,928 | 1,192,789 | 72,338 | 2,698,159 | 22,218 | 914,444 | Ontario. |
| 40,111 | 1,178,753 | 90,619 | 4,378,435 | 31,117 | 1,165,055 | Oxford. |
| 14,601 | 328,992 | 22,717 | 763,036 | 6,197 | 227,779 | Parry Sound. |
| 23,663 | 611,267 | 42,870 | 1,771,754 | 15,736 | 683,379 | Peel. |
| 57,944 | 1,529,606 | 94,295 | 3,633,965 | 28,934 | 1,226,736 | Perth. |
| 33,537 | 615,540 | 55,809 | 1,618,225 | 14,252 | 444,417 | Peterborough. |
| 19,518 | 325,316 | 48,248 | 1,492,903 | 13,612 | 272,920 | Prescott. |
| 9,915 | 232,065 | 26,690 | 973,520 | 8,713 | 223,140 | Prince Edward. |
| 6,059 | 136,149 | 10,362 | 366,273 | 3,178 | 97,784 | Rainy River & Kenora. |
| 54,840 | 976,590 | 85,996 | 2,148,679 | 22,496 | 600,411 | Renfrew. |
| 16,200 | 299,050 | 39,800 | 1,293,318 | 12,835 | 285,933 | Russell. |
| 79,134 | 1,883,202 | 123,705 | 4,274,436 | 32,738 | 1,359,000 | Simcoe. |
| 12,775 | 275,776 | 41,423 | 1,541,731 | 13,204 | 257,151 | Stormont. |
| 8,447 | 179,987 | 15,098 | 538,210 | 4,994 | 155,116 | Sudbury. |
| 3,308 | 80,264 | 7,716 | 400,241 | 3,218 | 130,669 | Thunder Bay. |
| 5,322 | 128,275 | 9,474 | 391,761 | 3,146 | 128,736 | Timiskaming. |
| 40,826 | 883,046 | 61,452 | 1,906,921 | 16,598 | 629,227 | Victoria. |
| 24,721 | 620,766 | 44,593 | 1,845,477 | 18,653 | 868,006 | Waterloo. |
| 11,314 | 299,222 | 24,178 | 1,071,062 | 9,634 | 336,517 | Welland. |
| 59,107 | 1,610,181 | 91,170 | 3,545,824 | 29,986 | 1,513,417 | Wellington. |
| 17,182 | 493,436 | 34,320 | 1,654,536 | 13,664 | 523,085 | Wentworth. |
| 32,474 | 890,340 | 68,592 | 3,173,720 | 24,826 | 982,130 | York. |
| | | | | | | The Province: |
| 1,600,516 | 38,808,348 | 2,836,181 | 103,899,416 | 883,620 | 32,629,693 | .....1922. |
| 1,685,843 | 41,766,682 | 2,890,113 | 103,861,565 | 944,613 | 37,509,685 | .....1921. |
| 1,711,817 | 76,467,572 | 2,881,827 | 176,897,490 | 1,018,770 | 63,355,503 | .....1920. |
| 1,786,175 | 82,823,433 | 2,927,191 | 184,041,594 | 1,040,213 | 65,655,072 | .....1919. |
| 1,770,683 | 80,596,580 | 2,867,722 | 172,259,261 | 932,691 | 57,529,269 | .....1918. |

SHEEP, SWINE

TABLE XX.—Showing by County Municipalities the number and value of Sheep, Swine slaughtered in the year ending June 15th, 1922, together

| Counties and Districts. | Sheep and Lambs. | | | | Swine. | |
|---|---|---|---|---|---|---|
| | Number on hand. | Value. | Sold or slaughtered. | | Number on hand. | Value. |
| | | | Number. | Value. | | |
| | | $ | | $ | | $ |
| Algoma | 11,048 | 69,147 | 6,917 | 40,876 | 3,489 | 36,162 |
| Brant | 8,154 | 59,761 | 5,032 | 38,420 | 21,798 | 231,810 |
| Bruce | 38,504 | 266,528 | 22,474 | 161,086 | 43,922 | 493,074 |
| Carleton | 26,640 | 171,398 | 16,304 | 113,765 | 26,560 | 257,052 |
| Dufferin | 29,408 | 228,734 | 17,668 | 147,216 | 30,112 | 306,032 |
| Dundas | 4,734 | 26,672 | 3,537 | 24,325 | 19,679 | 195,394 |
| Durham | 24,158 | 173,969 | 14,002 | 102,705 | 24,024 | 245,052 |
| Elgin | 20,994 | 152,057 | 14,604 | 117,777 | 50,580 | 537,856 |
| Essex | 24,491 | 165,317 | 17,451 | 107,469 | 98,420 | 1,061,746 |
| Frontenac | 15,274 | 82,329 | 10,388 | 61,570 | 21,192 | 227,948 |
| Glengarry | 8,252 | 44,858 | 4,823 | 30,003 | 16,165 | 171,271 |
| Grenville | 10,672 | 62,265 | 6,863 | 43,936 | 14,369 | 140,176 |
| Grey | 62,834 | 449,608 | 36,015 | 259,303 | 62,131 | 642,871 |
| Haldimand | 15,658 | 107,210 | 9,061 | 63,506 | 20,856 | 224,925 |
| Haliburton | 7,904 | 49,028 | 3,857 | 24,839 | 1,953 | 20,709 |
| Halton | 12,480 | 99,318 | 7,502 | 65,940 | 15,887 | 166,020 |
| Hastings | 37,630 | 208,134 | 21,664 | 129,431 | 49,743 | 487,585 |
| Huron | 24,960 | 170,018 | 15,970 | 121,286 | 61,111 | 693,627 |
| Kent | 16,986 | 127,463 | 12,565 | 92,238 | 103,223 | 1,143,298 |
| Lambton | 24,264 | 170,621 | 17,220 | 133,669 | 61,624 | 624,871 |
| Lanark | 40,465 | 252,660 | 21,874 | 148,830 | 20,013 | 203,869 |
| Leeds | 15,549 | 101,837 | 9,788 | 67,250 | 22,753 | 221,659 |
| Lennox & Addington | 13,239 | 81,369 | 7,999 | 49,179 | 20,233 | 214,544 |
| Lincoln | 8,015 | 60,653 | 5,380 | 41,041 | 10,208 | 121,280 |
| Manitoulin | 18,000 | 99,259 | 12,252 | 63,483 | 3,657 | 34,075 |
| Middlesex | 21,617 | 154,345 | 15,981 | 117,205 | 61,180 | 658,211 |
| Muskoka | 11,485 | 75,461 | 6,741 | 47,449 | 2,885 | 34,015 |
| Nipissing | 11,458 | 72,045 | 7,670 | 46,438 | 5,357 | 57,639 |
| Norfolk | 13,693 | 84,189 | 10,300 | 69,044 | 31,153 | 349,837 |
| Northumberland | 18,066 | 129,593 | 11,235 | 81,341 | 32,613 | 363,527 |
| Ontario | 32,707 | 236,357 | 19,019 | 142,107 | 41,270 | 429,349 |
| Oxford | 9,576 | 71,196 | 7,244 | 54,723 | 50,742 | 568,578 |
| Parry Sound | 21,036 | 135,228 | 11,319 | 70,179 | 4,724 | 48,116 |
| Peel | 14,837 | 113,567 | 9,537 | 77,096 | 23,257 | 249,730 |
| Perth | 10,436 | 77,254 | 7,724 | 62,651 | 60,557 | 672,881 |
| Peterborough | 14,794 | 93,061 | 9,756 | 61,712 | 18,546 | 188,237 |
| Prescott | 5,853 | 30,658 | 4,612 | 21,988 | 16,695 | 176,833 |
| Prince Edward | 11,204 | 72,536 | 6,942 | 47,361 | 16,105 | 173,761 |
| Rainy River and Kenora | 3,352 | 25,583 | 2,034 | 15,342 | 3,399 | 39,811 |
| Renfrew | 66,208 | 389,476 | 36,508 | 225,870 | 23,054 | 229,099 |
| Russell | 6,625 | 38,330 | 4,200 | 25,222 | 18,041 | 189,221 |
| Simcoe | 57,866 | 381,132 | 33,040 | 229,846 | 74,818 | 763,762 |
| Stormont | 4,481 | 29,719 | 2,999 | 21,220 | 19,743 | 208,408 |
| Sudbury | 6,470 | 41,940 | 3,773 | 27,024 | 4,600 | 50,881 |
| Thunder Bay | 730 | 5,336 | 394 | 2,488 | 2,940 | 35,378 |
| Timiskaming | 4,026 | 28,759 | 2,266 | 19,083 | 3,474 | 39,758 |
| Victoria | 26,552 | 167,262 | 14,016 | 89,592 | 26,841 | 282,891 |
| Waterloo | 8,167 | 54,496 | 5,101 | 37,833 | 39,374 | 448,123 |
| Welland | 8,880 | 61,215 | 5,240 | 37,849 | 12,180 | 136,299 |
| Wellington | 36,611 | 277,444 | 22,716 | 190,621 | 63,792 | 675,536 |
| Wentworth | 11,408 | 84,073 | 7,473 | 64,037 | 20,323 | 233,570 |
| York | 28,166 | 202,491 | 17,072 | 128,503 | 52,069 | 544,279 |
| The Province: | | | | | | |
| 1922 | 986,617 | 6,612,959 | 606,122 | 4,262,967 | 1,553,434 | 16,550,636 |
| 1921 | 1,081,828 | 8,207,564 | 537,087 | 3,878,796 | 1,563,807 | 19,205,488 |
| 1920 | 1,129,084 | 16,191,741 | 493,694 | 6,131,024 | 1,614,356 | 32,253,804 |
| 1919 | 1,101,740 | 18,128,240 | 458,952 | 6,126,881 | 1,695,487 | 33,263,051 |
| 1918 | 972,341 | 15,690,055 | 449,268 | 5,877,375 | 1,656,386 | 31,140,181 |

AND POULTRY.

and Poultry on hand on June 15th, 1922, and the number and value of those sold or with the totals for the Province for the past five years.

| Swine. | | Poultry of all Classes. | | | | Counties and Districts. |
|---|---|---|---|---|---|---|
| Sold or slaughtered. | | Number on hand. | Value. | Sold or slaughtered. | | |
| Number. | Value. | | | Number. | Value. | |
| | $ | | $ | | $ | |
| 5,278 | 80,588 | 64,480 | 63,694 | 37,244 | 48,547 | Algoma. |
| 27,093 | 487,007 | 168,775 | 149,010 | 72,328 | 78,331 | Brant. |
| 63,789 | 1,394,543 | 445,384 | 358,614 | 199,228 | 234,412 | Bruce. |
| 30,871 | 569,100 | 327,616 | 306,769 | 175,980 | 246,638 | Carleton. |
| 35,640 | 688,716 | 196,267 | 182,968 | 87,507 | 110,726 | Dufferin. |
| 24,880 | 450,841 | 208,588 | 184,316 | 82,666 | 105,310 | Dundas. |
| 33,056 | 646,087 | 281,250 | 239,713 | 122,239 | 134,674 | Durham. |
| 57,591 | 1,131,905 | 398,591 | 348,007 | 181,925 | 207,344 | Elgin. |
| 91,886 | 1,701,457 | 655,122 | 554,532 | 284,205 | 318,238 | Essex. |
| 23,853 | 449,986 | 171,334 | 177,890 | 96,083 | 135,996 | Frontenac. |
| 19,501 | 414,074 | 173,856 | 164,384 | 81,144 | 107,200 | Glengarry. |
| 18,909 | 348,008 | 167,742 | 151,911 | 79,572 | 95,421 | Grenville. |
| 83,507 | 1,829,617 | 516,459 | 451,709 | 240,054 | 282,796 | Grey. |
| 28,316 | 558,290 | 247,871 | 203,154 | 124,552 | 136,642 | Haldimand. |
| 2,936 | 55,859 | 30,391 | 23,600 | 15,859 | 15,778 | Haliburton. |
| 23,892 | 471,408 | 161,312 | 161,944 | 86,746 | 107,302 | Halton. |
| 61,039 | 1,234,912 | 366,920 | 281,383 | 153,430 | 157,008 | Hastings. |
| 88,396 | 1,824,008 | 701,770 | 580,243 | 291,064 | 305,608 | Huron. |
| 94,167 | 1,853,431 | 651,205 | 516,255 | 273,940 | 305,074 | Kent. |
| 68,928 | 1,464,047 | 652,268 | 571,967 | 285,383 | 355,255 | Lambton. |
| 24,861 | 504,894 | 204,573 | 183,994 | 93,192 | 109,585 | Lanark. |
| 24,454 | 481,477 | 211,904 | 201,381 | 97,356 | 130,514 | Leeds. |
| 27,065 | 565,129 | 208,119 | 168,044 | 101,172 | 108,507 | Lennox and Addington |
| 18,010 | 365,704 | 167,288 | 154,317 | 96,675 | 109,979 | Lincoln. |
| 5,545 | 96,349 | 36,686 | 32,972 | 20,166 | 27,601 | Manitoulin. |
| 80,912 | 1,736,220 | 796,671 | 744,142 | 346,594 | 418,023 | Middlesex. |
| 6,181 | 142,650 | 57,736 | 47,370 | 29,269 | 31,828 | Muskoka. |
| 6,220 | 116,011 | 47,069 | 38,219 | 26,467 | 27,266 | Nipissing. |
| 41,477 | 888,906 | 309,760 | 248,085 | 132,281 | 134,011 | Norfolk. |
| 43,560 | 935,994 | 319,689 | 268,197 | 135,216 | 148,847 | Northumberland. |
| 56,961 | 1,182,632 | 333,514 | 330,907 | 162,951 | 202,902 | Ontario. |
| 61,177 | 1,305,562 | 434,569 | 366,218 | 177,858 | 180,208 | Oxford. |
| 7,262 | 134,248 | 63,926 | 55,555 | 32,787 | 36,399 | Parry Sound. |
| 32,183 | 616,960 | 234,935 | 237,848 | 116,851 | 150,963 | Peel. |
| 79,164 | 1,803,861 | 468,565 | 387,926 | 198,196 | 208,179 | Perth. |
| 24,912 | 533,000 | 214,759 | 188,069 | 92,432 | 115,505 | Peterborough. |
| 17,590 | 352,416 | 148,443 | 131,205 | 81,523 | 93,472 | Prescott. |
| 21,052 | 438,627 | 147,231 | 124,439 | 66,856 | 80,454 | Prince Edward. |
| 4,622 | 106,005 | 45,849 | 41,811 | 21,192 | 26,101 | Rainy River & Kenora. |
| 23,318 | 443,076 | 246,638 | 217,628 | 122,860 | 135,618 | Renfrew. |
| 19,402 | 388,554 | 133,728 | 111,605 | 71,036 | 70,346 | Russell. |
| 96,114 | 1,960,917 | 542,538 | 485,053 | 258,310 | 316,323 | Simcoe. |
| 18,930 | 419,289 | 177,412 | 150,621 | 79,407 | 92,715 | Stormont. |
| 5,982 | 111,612 | 50,368 | 38,735 | 26,455 | 27,051 | Sudbury. |
| 4,007 | 89,527 | 45,812 | 39,786 | 19,974 | 20,685 | Thunder Bay. |
| 4,146 | 99,108 | 50,856 | 44,121 | 26,064 | 27,027 | Timiskaming. |
| 34,875 | 736,722 | 233,558 | 203,421 | 102,473 | 115,705 | Victoria. |
| 53,139 | 1,137,761 | 237,334 | 193,544 | 103,335 | 104,657 | Waterloo. |
| 19,133 | 414,866 | 207,723 | 180,903 | 106,117 | 106,703 | Welland. |
| 83,283 | 1,718,261 | 393,532 | 355,016 | 190,433 | 224,066 | Wellington. |
| 30,190 | 572,422 | 189,513 | 178,624 | 104,982 | 116,976 | Wentworth. |
| 69,082 | 1,503,503 | 416,818 | 419,433 | 224,887 | 276,439 | York. |
| | | | | | | The Province: |
| 1,928,337 | 39,556,147 | 13,964,317 | 12,241,252 | 6,436,516 | 7,462,955 | .....1922. |
| 1,939,192 | 39,409,466 | 11,458,206 | 11,168,318 | 6,194,772 | 7,618,519 | .....1921. |
| 2,101,007 | 64,079,147 | 11,005,645 | 11,787,708 | 6,253,837 | 8,001,147 | .....1920. |
| 2,154,317 | 59,879,582 | 11,705,809 | 11,351,364 | 6,434,693 | 7,254,051 | .....1919. |
| 2,130,060 | 46,997,183 | 12,281,105 | 9,307,051 | 6,516,460 | 5,318,857 | .....1918. |

LIVE STOCK AND

TABLE XXI.—Showing by County Municipalities the total value of Live Stock and Poultry numbers of the various classes on hand with

| Counties and Districts. | Total value of Live Stock sold or killed. | Horses on hand. | | | | Cattle on other than | |
|---|---|---|---|---|---|---|---|
| | | Stallions 2 yrs. old and over. | Mares 2 yrs. old and over. | Geldings 2 yrs. old and over. | Colts and Fillies under 2 years. | Bulls for breeding | Calves under 1 year. |
| | $ | | | | | | |
| Algoma | 343,150 | 24 | 1,681 | 1,388 | 268 | 241 | 3,294 |
| Brant | 1,118,947 | 48 | 4,646 | 4,108 | 485 | 680 | 7,091 |
| Bruce | 3,541,628 | 109 | 12,583 | 8,736 | 2,755 | 1,310 | 24,561 |
| Carleton | 1,845,054 | 111 | 8,765 | 7,162 | 1,720 | 2,596 | 16,277 |
| Dufferin | 1,659,456 | 69 | 6,240 | 4,467 | 1,104 | 840 | 12,212 |
| Dundas | 999,306 | 47 | 4,237 | 3,828 | 694 | 1,818 | 6,612 |
| Durham | 1,657,532 | 49 | 7,271 | 5,364 | 1,208 | 836 | 11,446 |
| Elgin | 2,509,770 | 63 | 8,212 | 6,840 | 1,064 | 1,708 | 13,543 |
| Essex | 2,900,844 | 76 | 10,415 | 7,237 | 1,311 | 1,225 | 9,558 |
| Frontenac | 1,079,555 | 45 | 5,355 | 4,355 | 742 | 2,238 | 12,718 |
| Glengarry | 915,072 | 84 | 4,860 | 2,950 | 870 | 2,212 | 7,690 |
| Grenville | 826,206 | 57 | 3,720 | 3,008 | 574 | 1,420 | 5,776 |
| Grey | 4,456,046 | 112 | 15,189 | 11,380 | 2,746 | 1,968 | 32,692 |
| Haldimand | 1,339,082 | 33 | 5,578 | 4,392 | 848 | 747 | 9,205 |
| Haliburton | 195,776 | 19 | 1,055 | 812 | 195 | 233 | 2,950 |
| Halton | 1,231,816 | 40 | 4,137 | 3,351 | 663 | 802 | 7,335 |
| Hastings | 2,213,212 | 132 | 9,652 | 8,043 | 1,335 | 3,633 | 20,910 |
| Huron | 4,502,029 | 127 | 15,710 | 11,415 | 3,462 | 1,597 | 28,626 |
| Kent | 3,482,585 | 115 | 11,860 | 10,183 | 1,986 | 1,038 | 15,700 |
| Lambton | 3,776,822 | 130 | 12,057 | 8,318 | 2,407 | 1,160 | 23,242 |
| Lanark | 1,413,249 | 72 | 6,154 | 4,481 | 1,043 | 1,580 | 16,470 |
| Leeds | 1,163,593 | 60 | 5,640 | 4,756 | 825 | 2,316 | 11,225 |
| Lennox & Add | 1,121,576 | 52 | 5,360 | 4,476 | 785 | 1,580 | 9,900 |
| Lincoln | 870,149 | 42 | 4,027 | 3,405 | 313 | 506 | 4,171 |
| Manitoulin | 343,121 | 19 | 1,251 | 1,003 | 206 | 245 | 3,762 |
| Middlesex | 4,589,228 | 126 | 16,845 | 12,019 | 3,043 | 2,360 | 29,223 |
| Muskoka | 406,068 | 19 | 1,820 | 1,428 | 203 | 348 | 4,336 |
| Nipissing | 375,329 | 60 | 1,713 | 1,360 | 285 | 702 | 4,649 |
| Norfolk | 1,603,443 | 42 | 6,902 | 5,813 | 871 | 1,300 | 8,537 |
| Northumberland | 1,871,734 | 98 | 7,927 | 6,833 | 1,183 | 1,830 | 13,542 |
| Ontario | 2,625,965 | 96 | 9,749 | 7,306 | 1,727 | 1,273 | 16,783 |
| Oxford | 2,911,336 | 77 | 10,164 | 8,386 | 1,316 | 2,765 | 16,193 |
| Parry Sound | 512,639 | 42 | 2,164 | 1,876 | 289 | 371 | 5,832 |
| Peel | 1,686,738 | 51 | 6,562 | 4,358 | 1,256 | 1,082 | 9,580 |
| Perth | 3,542,856 | 77 | 11,376 | 8,777 | 2,565 | 1,797 | 22,310 |
| Peterborough | 1,247,209 | 50 | 5,769 | 4,514 | 832 | 1,252 | 13,110 |
| Prescott | 827,899 | 68 | 4,215 | 3,277 | 751 | 2,342 | 8,890 |
| Prince Edward | 850,647 | 22 | 4,257 | 3,745 | 470 | 1,040 | 4,731 |
| Rainy R.&Kenora | 275,273 | 39 | 1,453 | 1,244 | 360 | 259 | 2,627 |
| Renfrew | 1,548,514 | 160 | 8,149 | 5,638 | 1,510 | 2,735 | 21,475 |
| Russell | 834,897 | 88 | 3,976 | 2,762 | 770 | 1,743 | 7,391 |
| Simcoe | 4,179,916 | 148 | 16,914 | 13,332 | 2,963 | 2,017 | 28,944 |
| Stormont | 840,090 | 30 | 3,966 | 3,260 | 523 | 1,787 | 5,477 |
| Sudbury | 355,014 | 43 | 1,620 | 1,185 | 344 | 619 | 4,489 |
| Thunder Bay | 270,273 | 50 | 811 | 977 | 71 | 274 | 1,918 |
| Timiskaming | 320,517 | 36 | 1,484 | 1,437 | 133 | 298 | 2,832 |
| Victoria | 1,691,783 | 44 | 6,960 | 5,020 | 1,240 | 848 | 14,500 |
| Waterloo | 2,278,693 | 86 | 6,612 | 5,284 | 1,287 | 915 | 12,104 |
| Welland | 958,779 | 30 | 4,321 | 3,540 | 383 | 611 | 5,109 |
| Wellington | 3,866,721 | 91 | 12,095 | 9,288 | 2,037 | 1,463 | 24,290 |
| Wentworth | 1,378,219 | 32 | 5,601 | 4,880 | 666 | 820 | 7,476 |
| York | 3,119,879 | 129 | 11,918 | 9,445 | 2,156 | 1,697 | 13,039 |
| The Province: | | | | | | | |
| 1922 | 90,475,235 | 3,569 | 350,998 | 272,442 | 58,843 | 69,077 | 626,353 |
| 1921 | 97,022,845 | 3,665 | 353,075 | 272,087 | 65,410 | 67,759 | 651,532 |
| 1920 | 152,213,847 | 3,902 | 351,517 | 266,477 | 82,744 | 65,757 | 655,316 |
| 1919 | 149,727,250 | 4,087 | 354,677 | 269,390 | 91,415 | 63,189 | 688,850 |
| 1918 | 126,742,038 | 4,201 | 360,119 | 273,820 | 94,837 | 60,563 | 691,441 |

## POULTRY ON HAND.

on hand in 1922, together with totals for the Province for the past five years, also the comparative totals for poultry for five years.

| hand Milch Cows. | | Poultry on hand. | | | | Counties and Districts. |
|---|---|---|---|---|---|---|
| Steers 2 yrs. old and over. | All other Cattle. | Turkeys. | Geese. | Ducks. | Other Fowls. | |
| 755 | 2,903 | 3,496 | 1,344 | 676 | 58,964 | Algoma. |
| 1,716 | 6,525 | 983 | 4,250 | 4,133 | 159,409 | Brant. |
| 15,659 | 35,065 | 12,464 | 16,737 | 17,235 | 398,948 | Bruce. |
| 6,045 | 18,354 | 8,250 | 14,919 | 8,198 | 296,249 | Carleton. |
| 6,257 | 12,793 | 2,488 | 13,382 | 6,762 | 173,635 | Dufferin. |
| 188 | 6,158 | 7,705 | 6,487 | 5,436 | 188,960 | Dundas. |
| 5,491 | 14,703 | 2,285 | 11,700 | 9,075 | 258,190 | Durham. |
| 4,730 | 14,619 | 11,055 | 9,667 | 14,373 | 363,496 | Elgin. |
| 1,950 | 7,563 | 10,434 | 22,191 | 27,648 | 594,849 | Essex. |
| 1,592 | 10,081 | 18,075 | 3,962 | 4,974 | 144,323 | Frontenac. |
| 401 | 7,382 | 11,313 | 2,064 | 2,585 | 157,894 | Glengarry. |
| 265 | 5,789 | 6,387 | 4,713 | 2,740 | 153,902 | Grenville. |
| 16,885 | 40,335 | 10,016 | 23,607 | 21,748 | 461,088 | Grey. |
| 2,518 | 8,070 | 6,988 | 6,024 | 8,384 | 226,475 | Haldimand. |
| 928 | 2,779 | 1,239 | 584 | 123 | 28,445 | Haliburton. |
| 3,255 | 7,586 | 3,281 | 7,357 | 5,064 | 145,610 | Halton. |
| 2,833 | 16,562 | 9,447 | 7,268 | 4,190 | 346,015 | Hastings. |
| 17,402 | 38,329 | 8,463 | 22,576 | 29,875 | 640,856 | Huron. |
| 9,727 | 17,948 | 11,090 | 16,991 | 30,218 | 592,906 | Kent. |
| 13,935 | 28,624 | 26,870 | 21,046 | 26,047 | 578,305 | Lambton. |
| 6,757 | 17,740 | 8,194 | 3,597 | 2,988 | 189,794 | Lanark. |
| 841 | 11,064 | 12,300 | 3,746 | 5,019 | 190,839 | Leeds. |
| 2,538 | 9,019 | 7,141 | 3,449 | 4,684 | 192,845 | Lennox & Add. |
| 481 | 3,239 | 3,781 | 2,864 | 4,120 | 156,523 | Lincoln. |
| 1,733 | 4,469 | 3,247 | 1,519 | 962 | 30,958 | Manitoulin. |
| 17,370 | 39,334 | 27,555 | 21,489 | 36,268 | 711,359 | Middlesex. |
| 1,458 | 4,196 | 982 | 716 | 690 | 55,348 | Muskoka. |
| 920 | 3,937 | 330 | 951 | 574 | 45,214 | Nipissing. |
| 781 | 7,452 | 6,590 | 4,389 | 6,514 | 292,267 | Norfolk. |
| 3,313 | 13,926 | 7,727 | 6,453 | 7,002 | 298,507 | Northumberland. |
| 7,838 | 20,034 | 3,432 | 14,940 | 10,724 | 304,418 | Ontario. |
| 5,170 | 15,983 | 2,399 | 9,799 | 11,614 | 410,757 | Oxford. |
| 1,918 | 6,480 | 1,692 | 1,510 | 1,341 | 59,383 | Parry Sound. |
| 4,063 | 8,938 | 3,978 | 12,670 | 8,101 | 210,186 | Peel. |
| 8,568 | 25,269 | 1,855 | 16,980 | 18,368 | 431,362 | Perth. |
| 4,695 | 14,480 | 11,054 | 6,305 | 3,149 | 194,251 | Peterborough. |
| 400 | 7,886 | 7,220 | 3,646 | 1,812 | 135,765 | Prescott. |
| 260 | 3,884 | 4,508 | 2,117 | 3,998 | 136,608 | Prince Edward. |
| 715 | 2,458 | 1,600 | 982 | 256 | 43,011 | Rainy R.& Kenora. |
| 9,320 | 21,310 | 7,880 | 9,255 | 3,172 | 226,331 | Renfrew. |
| 402 | 6,664 | 938 | 3,464 | 3,103 | 126,223 | Russell. |
| 14,972 | 33,201 | 12,559 | 27,128 | 16,835 | 486,016 | Simcoe. |
| 158 | 5,353 | 6,664 | 3,194 | 4,350 | 163,204 | Stormont. |
| 611 | 2,728 | 1,060 | 1,116 | 469 | 47,723 | Sudbury. |
| 122 | 994 | 233 | 497 | 841 | 44,241 | Thunder Bay. |
| 261 | 1,931 | 834 | 999 | 1,423 | 47,600 | Timiskaming. |
| 7,917 | 17,561 | 5,430 | 11,793 | 6,305 | 210,030 | Victoria. |
| 2,320 | 9,382 | 448 | 5,566 | 5,354 | 225,966 | Waterloo. |
| 1,002 | 4,592 | 2,468 | 4,046 | 5,375 | 195,834 | Welland. |
| 9,131 | 24,223 | 2,187 | 21,648 | 13,595 | 356,102 | Wellington. |
| 1,832 | 7,054 | 1,502 | 5,050 | 5,397 | 177,564 | Wentworth. |
| 3,650 | 14,088 | 6,330 | 17,740 | 16,652 | 376,096 | York. |
| | | | | | | The Province: |
| 234,049 | 671,037 | 336,447 | 446,487 | 440,539 | 12,740,844 | .....1922. |
| 249,099 | 717,453 | 291,377 | 413,219 | 363,758 | 10,389,852 | .....1921. |
| 245,706 | 745,038 | 267,883 | 395,238 | 311,652 | 10,030,872 | .....1920. |
| 260,204 | 773,932 | 327,802 | 426,663 | 377,838 | 10,573,506 | .....1919. |
| 257,272 | 761,407 | 376,609 | 412,214 | 392,001 | 11,100,281 | .....1918. |

TABLE XXII.—Showing by County Municipalities the numbers of the various comparative totals for the

| Counties and Districts. | Horses sold. | | | | Cattle sold | | |
|---|---|---|---|---|---|---|---|
| | Stallions 2 yrs. old and over. | Mares 2 yrs. old and over. | Geldings 2 yrs. old and over. | Colts and Fillies under 2 yrs. | Bulls for breeding. | Milch Cows. | Calves under 1 year. |
| Algoma | 2 | 107 | 134 | 33 | 88 | 723 | 1,505 |
| Brant | 9 | 261 | 328 | 35 | 275 | 1,659 | 3,827 |
| Bruce | 20 | 1,164 | 804 | 183 | 481 | 3,308 | 1,858 |
| Carleton | 18 | 587 | 480 | 78 | 970 | 4,675 | 10,538 |
| Dufferin | 17 | 450 | 362 | 68 | 225 | 1,302 | 1,018 |
| Dundas | 12 | 329 | 271 | 53 | 678 | 3,703 | 7,291 |
| Durham | 9 | 491 | 445 | 54 | 388 | 2,044 | 2,959 |
| Elgin | 16 | 664 | 629 | 98 | 781 | 3,945 | 6,961 |
| Essex | 22 | 850 | 603 | 94 | 567 | 2,446 | 6,635 |
| Frontenac | 6 | 326 | 282 | 73 | 884 | 3,796 | 6,796 |
| Glengarry | 14 | 360 | 228 | 82 | 739 | 3,070 | 9,539 |
| Grenville | 5 | 241 | 190 | 42 | 592 | 3,403 | 5,856 |
| Grey | 29 | 1,166 | 908 | 192 | 632 | 4,351 | 3,550 |
| Haldimand | 8 | 477 | 336 | 71 | 329 | 1,782 | 3,869 |
| Haliburton | 2 | 93 | 39 | 16 | 71 | 383 | 598 |
| Halton | 9 | 321 | 266 | 27 | 362 | 1,716 | 2,678 |
| Hastings | 20 | 650 | 481 | 82 | 1,388 | 5,440 | 12,458 |
| Huron | 37 | 1,370 | 1,256 | 224 | 667 | 3,974 | 3,696 |
| Kent | 21 | 1,013 | 912 | 152 | 517 | 2,788 | 3,225 |
| Lambton | 20 | 1,053 | 857 | 171 | 486 | 3,345 | 4,005 |
| Lanark | 10 | 360 | 358 | 90 | 446 | 2,570 | 3,990 |
| Leeds | 10 | 305 | 220 | 42 | 849 | 4,953 | 7,952 |
| Lennox & Add. | 6 | 387 | 308 | 35 | 712 | 2,184 | 5,654 |
| Lincoln | 17 | 290 | 207 | 26 | 263 | 1,335 | 3,170 |
| Manitoulin | 3 | 115 | 73 | 20 | 63 | 387 | 378 |
| Middlesex | 19 | 1,371 | 1,098 | 137 | 955 | 6,031 | 10,320 |
| Muskoka | 6 | 145 | 140 | 33 | 118 | 835 | 1,280 |
| Nipissing | 6 | 142 | 106 | 38 | 274 | 962 | 893 |
| Norfolk | 10 | 437 | 313 | 64 | 569 | 3,091 | 6,956 |
| Northumberland | 13 | 545 | 440 | 72 | 863 | 3,177 | 6,668 |
| Ontario | 10 | 762 | 602 | 82 | 702 | 2,850 | 4,489 |
| Oxford | 15 | 825 | 736 | 116 | 1,057 | 5,928 | 12,837 |
| Parry Sound | 6 | 158 | 123 | 57 | 149 | 946 | 998 |
| Peel | 14 | 667 | 499 | 78 | 456 | 3,163 | 4,665 |
| Perth | 14 | 925 | 851 | 161 | 718 | 4,060 | 6,252 |
| Peterborough | 10 | 400 | 325 | 50 | 446 | 2,282 | 3,502 |
| Prescott | 9 | 311 | 352 | 60 | 916 | 3,342 | 6,724 |
| Prince Edward | 5 | 278 | 200 | 38 | 510 | 1,967 | 4,870 |
| Rainy R. & Kenora | 6 | 103 | 72 | 19 | 94 | 606 | 698 |
| Renfrew | 28 | 535 | 461 | 105 | 813 | 2,678 | 3,405 |
| Russell | 10 | 296 | 174 | 38 | 618 | 2,916 | 6,887 |
| Simcoe | 42 | 1,280 | 1,013 | 199 | 816 | 4,400 | 5,360 |
| Stormont | 2 | 223 | 192 | 54 | 581 | 3,207 | 8,326 |
| Sudbury | 3 | 154 | 109 | 20 | 348 | 926 | 1,720 |
| Thunder Bay | 5 | 72 | 97 | 12 | 82 | 983 | 1,496 |
| Timiskaming | 6 | 178 | 125 | 15 | 180 | 736 | 632 |
| Victoria | 11 | 514 | 379 | 71 | 310 | 1,850 | 2,366 |
| Waterloo | 11 | 557 | 431 | 91 | 401 | 2,772 | 3,676 |
| Welland | 5 | 285 | 203 | 41 | 330 | 1,677 | 4,276 |
| Wellington | 30 | 883 | 740 | 128 | 622 | 3,352 | 3,202 |
| Wentworth | 7 | 450 | 319 | 62 | 362 | 2,002 | 5,389 |
| York | 21 | 880 | 856 | 129 | 790 | 4,677 | 10,154 |
| The Province: | | | | | | | |
| 1922 | 666 | 26,806 | 21,933 | 4,011 | 27,533 | 140,698 | 248,047 |
| 1921 | 699 | 34,329 | 27,693 | 5,219 | 27,972 | 157,100 | 264,812 |
| 1920 | 727 | 38,085 | 31,429 | 6,307 | 30,177 | 176,783 | 266,353 |
| 1919 | 645 | 39,814 | 31,544 | 6,351 | 29,983 | 183,250 | 260,399 |
| 1918 | 347 | 41,352 | 32,566 | 6,719 | 28,429 | 166,963 | 222,578 |

SOLD OR SLAUGHTERED.

classes of Live Stock and Poultry sold or slaughtered in the year ending June 15th, 1922, with Province for five years.

| or slaughtered. | | Poultry sold or killed. | | | | Counties and Districts. |
|---|---|---|---|---|---|---|
| Steers 2 yrs. old and over. | All other Cattle. | Turkeys. | Geese. | Ducks. | Other Fowl. | |
| 953 | 1,090 | 3,159 | 1,288 | 1,092 | 31,705 | Algoma. |
| 2,875 | 2,694 | 633 | 4,849 | 3,634 | 63,212 | Brant. |
| 14,218 | 10,380 | 12,948 | 14,919 | 18,979 | 152,382 | Bruce. |
| 6,062 | 4,404 | 8,545 | 15,678 | 11,630 | 140,127 | Carleton. |
| 6,031 | 4,428 | 2,562 | 12,787 | 7,881 | 64,277 | Dufferin. |
| 132 | 1,287 | 6,614 | 5,936 | 5,712 | 64,404 | Dundas. |
| 5,025 | 5,085 | 2,181 | 9,371 | 10,260 | 100,427 | Durham. |
| 5,298 | 5,298 | 9,360 | 8,588 | 12,853 | 151,124 | Elgin. |
| 2,852 | 3,208 | 9,477 | 18,828 | 20,812 | 235,088 | Essex. |
| 1,756 | 3,287 | 14,705 | 4,314 | 5,233 | 71,831 | Frontenac. |
| 294 | 1,758 | 11,856 | 1,761 | 2,570 | 64,957 | Glengarry. |
| 267 | 1,413 | 5,388 | 4,439 | 3,702 | 66,043 | Grenville. |
| 17,640 | 12,580 | 10,814 | 22,473 | 29,317 | 177,450 | Grey. |
| 3,565 | 3,324 | 7,200 | 5,573 | 9,502 | 102,277 | Haldimand. |
| 1,008 | 1,026 | 1,450 | 485 | 201 | 13,723 | Haliburton. |
| 3,741 | 2,688 | 2,141 | 6,801 | 6,688 | 71,116 | Halton. |
| 2,315 | 5,525 | 9,129 | 7,894 | 7,590 | 128,817 | Hastings. |
| 16,956 | 13,267 | 7,646 | 20,402 | 33,789 | 229,227 | Huron. |
| 9,324 | 5,741 | 10,039 | 17,981 | 29,840 | 216,080 | Kent. |
| 14,723 | 11,559 | 24,458 | 19,841 | 26,424 | 214,660 | Lambton. |
| 6,298 | 5,778 | 7,556 | 2,446 | 2,862 | 80,328 | Lanark. |
| 1,026 | 2,826 | 11,272 | 4,326 | 6,310 | 75,448 | Leeds. |
| 2,282 | 2,838 | 6,936 | 3,567 | 4,244 | 86,425 | Lennox & Add. |
| 1,253 | 1,781 | 4,098 | 2,445 | 3,188 | 86,944 | Lincoln. |
| 1,986 | 1,509 | 3,024 | 1,638 | 1,145 | 14,359 | Manitoulin. |
| 14,886 | 14,653 | 22,479 | 18,919 | 37,034 | 268,162 | Middlesex. |
| 1,227 | 1,250 | 1,414 | 807 | 822 | 26,226 | Muskoka. |
| 1,276 | 1,260 | 398 | 1,435 | 966 | 23,668 | Nipissing. |
| 903 | 2,326 | 4,307 | 4,724 | 8,701 | 114,549 | Norfolk. |
| 3,213 | 4,290 | 6,667 | 6,160 | 8,840 | 113,549 | Northumberland. |
| 7,686 | 6,491 | 2,976 | 14,416 | 15,281 | 130,278 | Ontario. |
| 5,514 | 5,781 | 1,865 | 9,107 | 13,835 | 153,051 | Oxford. |
| 1,975 | 2,129 | 1,125 | 1,299 | 1,798 | 28,565 | Parry Sound. |
| 4,349 | 3,103 | 3,865 | 12,831 | 9,112 | 91,043 | Peel. |
| 9,731 | 8,173 | 2,240 | 16,358 | 21,556 | 158,042 | Perth. |
| 4,487 | 3,535 | 9,148 | 5,660 | 4,905 | 72,719 | Peterborough. |
| 350 | 2,280 | 6,659 | 3,808 | 2,132 | 68,924 | Prescott. |
| 214 | 1,152 | 5,602 | 2,586 | 4,425 | 54,243 | Prince Edward. |
| 760 | 1,020 | 1,890 | 1,045 | 347 | 17,910 | Rainy R.& Kenora. |
| 8,888 | 6,712 | 6,995 | 9,076 | 4,088 | 102,701 | Renfrew. |
| 607 | 1,807 | 868 | 3,542 | 3,390 | 63,236 | Russell. |
| 12,204 | 9,958 | 11,329 | 23,749 | 23,469 | 199,763 | Simcoe. |
| 132 | 958 | 7,382 | 2,917 | 4,653 | 64,455 | Stormont. |
| 936 | 1,064 | 1,064 | 1,388 | 355 | 23,648 | Sudbury. |
| 125 | 532 | 321 | 576 | 637 | 18,440 | Thunder Bay. |
| 428 | 1,170 | 560 | 601 | 1,906 | 22,997 | Timiskaming. |
| 7,023 | 5,049 | 4,772 | 10,377 | 7,307 | 80,017 | Victoria. |
| 6,906 | 4,898 | 536 | 5,657 | 7,232 | 89,910 | Waterloo. |
| 1,188 | 2,163 | 1,682 | 3,251 | 9,804 | 91,380 | Welland. |
| 12,375 | 10,435 | 3,238 | 19,967 | 15,816 | 151,412 | Wellington. |
| 2,360 | 3,551 | 1,109 | 4,560 | 6,860 | 92,453 | Wentworth. |
| 4,787 | 4,418 | 4,504 | 16,393 | 24,626 | 179,364 | York. |
| | | | | | | The Province: |
| 242,410 | 224,932 | 308,186 | 419,839 | 505,355 | 5,203,136 | .....1922. |
| 248,692 | 246,037 | 313,321 | 420,724 | 452,233 | 5,008,494 | .....1921. |
| 272,240 | 273,217 | 331,251 | 427,871 | 467,616 | 5,027,099 | .....1920. |
| 287,452 | 279,129 | 351,123 | 431,807 | 483,792 | 5,167,971 | .....1919. |
| 273,675 | 241,046 | 344,773 | 459,913 | 514,125 | 5,197,649 | .....1918. |

## SHEEP AND SWINE.

TABLE XXIII.—Showing by County Municipalities the numbers by classes of Sheep and Swine on hand June 15th, 1922, and the numbers sold or slaughtered in the preceding year ending June 15th, 1922.

| Counties and Districts. | Sheep and Lambs on hand. | | Swine on hand. | | Sheep and Lambs sold or slaughtered. | | Swine sold or slaughtered. | |
|---|---|---|---|---|---|---|---|---|
| | Sheep. | Lambs. | Brood Sows. | All other Pigs. | Sheep. | Lambs. | Brood Sows. | All other Pigs. |
| Algoma | 5,791 | 5,257 | 559 | 2,930 | 3,125 | 3,792 | 569 | 4,709 |
| Brant | 4,350 | 3,804 | 2,968 | 18,830 | 1,754 | 3,278 | 1,660 | 25,433 |
| Bruce | 18,668 | 19,836 | 5,637 | 38,285 | 5,289 | 17,185 | 5,737 | 58,052 |
| Carleton | 13,229 | 13,411 | 3,370 | 23,190 | 5,919 | 10,385 | 3,134 | 27,737 |
| Dufferin | 14,560 | 14,848 | 3,703 | 26,409 | 5,481 | 12,187 | 2,885 | 32,755 |
| Dundas | 2,352 | 2,382 | 2,684 | 16,995 | 1,516 | 2,021 | 2,153 | 22,727 |
| Durham | 12,221 | 11,937 | 3,312 | 20,712 | 4,812 | 9,190 | 3,431 | 29,625 |
| Elgin | 10,369 | 10,625 | 5,927 | 44,653 | 5,727 | 8,877 | 4,887 | 52,704 |
| Essex | 12,353 | 12,138 | 13,158 | 85,262 | 8,494 | 8,957 | 7,340 | 84,546 |
| Frontenac | 7,507 | 7,767 | 2,665 | 18,527 | 3,344 | 7,044 | 2,758 | 21,095 |
| Glengarry | 4,211 | 4,041 | 2,046 | 14,119 | 2,287 | 2,536 | 2,923 | 16,578 |
| Grenville | 5,412 | 5,260 | 1,905 | 12,464 | 2,666 | 4,197 | 2,047 | 16,862 |
| Grey | 30,723 | 32,111 | 7,765 | 54,366 | 10,740 | 25,275 | 7,680 | 75,827 |
| Haldimand | 8,022 | 7,636 | 2,465 | 18,391 | 2,727 | 6,334 | 2,724 | 25,592 |
| Haliburton | 4,104 | 3,800 | 295 | 1,658 | 1,187 | 2,670 | 348 | 2,588 |
| Halton | 6,625 | 5,855 | 2,071 | 13,816 | 3,360 | 4,142 | 1,677 | 22,215 |
| Hastings | 19,065 | 18,565 | 6,356 | 43,387 | 7,515 | 14,149 | 5,383 | 55,656 |
| Huron | 11,905 | 13,055 | 7,914 | 53,197 | 5,049 | 10,921 | 6,348 | 82,048 |
| Kent | 8,863 | 8,123 | 13,006 | 90,217 | 4,821 | 7,744 | 8,081 | 86,086 |
| Lambton | 11,810 | 12,454 | 7,050 | 54,574 | 5,472 | 11,748 | 5,227 | 63,701 |
| Lanark | 19,828 | 20,637 | 2,897 | 17,116 | 6,364 | 15,510 | 3,327 | 21,534 |
| Leeds | 7,726 | 7,823 | 2,885 | 19,868 | 3,581 | 6,207 | 2,995 | 21,459 |
| Lennox & Add. | 6,451 | 6,788 | 2,740 | 17,493 | 2,585 | 5,414 | 3,734 | 23,331 |
| Lincoln | 4,272 | 3,743 | 1,378 | 8,830 | 2,420 | 2,960 | 1,375 | 16,635 |
| Manitoulin | 8,977 | 9,023 | 556 | 3,101 | 4,383 | 7,869 | 715 | 4,830 |
| Middlesex | 10,864 | 10,753 | 7,623 | 53,557 | 5,977 | 10,004 | 6,871 | 74,041 |
| Muskoka | 6,142 | 5,343 | 523 | 2,362 | 2,379 | 4,362 | 856 | 5,325 |
| Nipissing | 6,632 | 4,826 | 1,003 | 4,354 | 3,226 | 4,444 | 1,282 | 4,938 |
| Norfolk | 7,492 | 6,201 | 3,981 | 27,172 | 5,049 | 5,251 | 3,813 | 37,664 |
| Northumberland | 9,228 | 8,838 | 4,278 | 28,335 | 4,536 | 6,699 | 4,135 | 39,425 |
| Ontario | 17,379 | 15,328 | 5,015 | 36,255 | 6,970 | 12,049 | 4,159 | 52,802 |
| Oxford | 4,856 | 4,720 | 6,380 | 44,362 | 2,931 | 4,313 | 4,919 | 56,258 |
| Parry Sound | 11,201 | 9,835 | 700 | 4,024 | 4,435 | 6,884 | 999 | 6,263 |
| Peel | 7,772 | 7,065 | 3,076 | 20,181 | 3,817 | 5,720 | 3,145 | 29,038 |
| Perth | 5,055 | 5,381 | 7,554 | 53,003 | 3,288 | 4,436 | 6,333 | 72,831 |
| Peterborough | 7,873 | 6,921 | 2,317 | 16,229 | 3,475 | 6,281 | 3,282 | 21,630 |
| Prescott | 3,096 | 2,757 | 2,094 | 14,601 | 1,929 | 2,683 | 1,789 | 15,801 |
| Prince Edward | 5,594 | 5,610 | 2,099 | 14,006 | 2,586 | 4,356 | 2,043 | 19,009 |
| Rainy R.&Kenora | 2,115 | 1,237 | 517 | 2,882 | 994 | 1,040 | 855 | 3,767 |
| Renfrew | 34,297 | 31,911 | 3,601 | 19,453 | 13,451 | 23,057 | 3,830 | 19,488 |
| Russell | 3,651 | 2,974 | 2,226 | 15,815 | 1,669 | 2,531 | 2,139 | 17,263 |
| Simcoe | 29,434 | 28,432 | 9,273 | 65,545 | 11,966 | 21,074 | 6,915 | 89,199 |
| Stormont | 2,373 | 2,108 | 2,565 | 17,178 | 1,073 | 1,926 | 3,284 | 15,646 |
| Sudbury | 3,903 | 2,567 | 784 | 3,816 | 2,576 | 1,197 | 980 | 5,002 |
| Thunder Bay | 436 | 294 | 466 | 2,474 | 148 | 246 | 421 | 3,586 |
| Timiskaming | 2,245 | 1,781 | 574 | 2,900 | 1,248 | 1,018 | 656 | 3,490 |
| Victoria | 13,545 | 13,007 | 3,585 | 23,256 | 4,219 | 9,797 | 3,527 | 31,348 |
| Waterloo | 4,096 | 4,071 | 4,926 | 34,448 | 1,684 | 3,417 | 3,293 | 49,846 |
| Welland | 4,661 | 4,219 | 1,646 | 10,534 | 1,522 | 3,718 | 1,825 | 17,308 |
| Wellington | 17,929 | 18,682 | 7,795 | 55,997 | 7,223 | 15,493 | 5,684 | 77,599 |
| Wentworth | 5,556 | 5,852 | 2,676 | 17,647 | 3,473 | 4,000 | 1,869 | 28,321 |
| York | 14,500 | 13,666 | 6,282 | 45,787 | 5,527 | 11,545 | 4,905 | 64,177 |
| The Province: 1922 | 501,319 | 485,298 | 198,871 | 1,354 563 | 217,989 | 388,133 | 172,947 | 1,755,390 |

NOTE—Sheep and Swine were not so classified in previous years.

## FARM PROPERTY, IMPLEMENTS AND LIVE STOCK.

TABLE XXIV.—Showing by County Municipalities of Ontario the value of farm lands, buildings, implements and live stock for the year 1922, together with the totals for the Province for the past five years.

| Counties and Districts. | Land. | Buildings. | Implements. | Live Stock on hand. | Total. |
|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ |
| Algoma | 5,301,706 | 2,052,575 | 806,831 | 1,107,682 | 9,268,794 |
| Brant | 11,705,770 | 7,276,369 | 2,312,166 | 2,880,015 | 24,174,320 |
| Bruce | 29,888,752 | 16,545,673 | 5,090,693 | 7,616,306 | 59,141,424 |
| Carleton | 25,742,605 | 12,562,570 | 4,277,577 | 5,633,859 | 48,216,611 |
| Dufferin | 11,822,509 | 8,182,212 | 2,327,315 | 3,794,692 | 26,126,728 |
| Dundas | 11,206,250 | 6,688,467 | 2,771,632 | 3,194,836 | 23,861,185 |
| Durham | 13,261,247 | 8,437,752 | 2,850,178 | 3,973,793 | 28,522,970 |
| Elgin | 23,772,326 | 13,134,829 | 4,076,860 | 5,732,613 | 46,716,628 |
| Essex | 38,815,296 | 16,975,766 | 5,448,644 | 5,636,919 | 66,876,625 |
| Frontenac | 10,813,317 | 5,499,095 | 2,083,070 | 3,237,300 | 21,632,782 |
| Glengarry | 13,875,536 | 6,531,159 | 2,593,995 | 3,033,585 | 26,034,275 |
| Grenville | 7,240,227 | 4,746,492 | 1,751,353 | 2,277,236 | 16,015,308 |
| Grey | 32,816,726 | 21,302,599 | 6,459,653 | 9,469,036 | 70,048,014 |
| Haldimand | 12,448,142 | 7,687,314 | 2,801,120 | 3,071,176 | 26,007,752 |
| Haliburton | 1,805,818 | 749,988 | 321,175 | 600,067 | 3,477,048 |
| Halton | 14,016,330 | 7,629,049 | 2,178,240 | 2,751,278 | 26,574,897 |
| Hastings | 19,062,192 | 10,479,850 | 4,291,305 | 5,641,702 | 39,475,049 |
| Huron | 34,040,842 | 20,582,112 | 6,549,496 | 9,503,883 | 70,676,333 |
| Kent | 45,504,509 | 19,062,077 | 6,716,860 | 7,206,254 | 78,489,700 |
| Lambton | 34,935,549 | 16,338,073 | 5,986,612 | 7,584,666 | 64,844,900 |
| Lanark | 11,628,599 | 5,967,836 | 2,259,376 | 3,771,528 | 23,627,339 |
| Leeds | 12,637,576 | 7,154,717 | 2,765,075 | 3,801,502 | 26,358,870 |
| Lennox and Addington | 10,580,501 | 6,387,156 | 2,504,064 | 3,178,597 | 22,650,318 |
| Lincoln | 17,750,444 | 8,534,567 | 2,426,272 | 2,047,185 | 30,758,468 |
| Manitoulin | 2,901,915 | 1,040,240 | 500,868 | 892,054 | 5,335,077 |
| Middlesex | 44,119,705 | 23,489,533 | 7,769,296 | 10,781,347 | 86,159,881 |
| Muskoka | 3,368,232 | 1,761,435 | 790,531 | 1,130,133 | 7,050,331 |
| Nipissing | 3,225,488 | 1,447,157 | 754,961 | 1,073,757 | 6,501,363 |
| Norfolk | 14,966,548 | 8,633,656 | 3,318,380 | 3,804,001 | 30,722,585 |
| Northumberland | 15,262,446 | 9,709,333 | 3,294,512 | 4,448,814 | 32,715,105 |
| Ontario | 20,697,576 | 12,561,876 | 3,988,559 | 5,760,622 | 43,008,633 |
| Oxford | 26,517,923 | 16,243,363 | 5,606,660 | 7,580,523 | 55,948,469 |
| Parry Sound | 4,006,794 | 1,963,434 | 890,093 | 1,546,306 | 8,406,627 |
| Peel | 16,068,302 | 9,929,465 | 3,039,101 | 3,677,221 | 32,714,089 |
| Perth | 25,640,470 | 17,918,652 | 5,508,564 | 7,153,778 | 56,221,464 |
| Peterborough | 12,728,160 | 6,771,094 | 2,253,730 | 3,225,985 | 24,978,969 |
| Prescott | 13,955,926 | 7,216,426 | 2,690,512 | 2,681,078 | 26,543,942 |
| Prince Edward | 8,545,486 | 5,637,982 | 2,324,862 | 2,230,589 | 18,738,919 |
| Rainy River and Kenora | 4,570,372 | 1,202,068 | 611,505 | 915,764 | 7,299,709 |
| Renfrew | 20,637,175 | 8,625,973 | 3,651,775 | 4,723,706 | 37,638,629 |
| Russell | 11,952,487 | 5,257,604 | 1,840,132 | 2,405,736 | 21,455,959 |
| Simcoe | 34,344,628 | 20,699,113 | 6,733,591 | 9,543,503 | 71,320,835 |
| Stormont | 9,186,881 | 5,464,199 | 2,228,891 | 2,730,155 | 19,610,126 |
| Sudbury | 4,127,377 | 1,416,609 | 779,070 | 1,065,510 | 7,388,566 |
| Thunder Bay | 5,006,189 | 1,310,986 | 686,388 | 760,717 | 7,764,280 |
| Timiskaming | 6,841,646 | 1,468,332 | 895,990 | 932,158 | 10,138,126 |
| Victoria | 15,178,718 | 7,065,288 | 2,647,967 | 4,014,055 | 28,906,028 |
| Waterloo | 16,393,538 | 10,803,062 | 3,229,722 | 3,960,904 | 34,387,226 |
| Welland | 12,282,542 | 7,093,284 | 2,516,217 | 2,330,110 | 24,222,153 |
| Wellington | 25,206,704 | 17,656,965 | 5,096,434 | 7,415,805 | 55,375,908 |
| Wentworth | 18,356,776 | 9,309,372 | 3,022,588 | 3,347,375 | 34,036,111 |
| York | 34,133,771 | 17,246,882 | 5,509,693 | 6,962,702 | 63,853,048 |
| The Province: | | | | | |
| 1922 | 880,896,544 | 479,451,680 | 163,830,154 | 213,840,118 | 1,738,018,496 |
| 1921 | 851,300,059 | 484,188,897 | 159,913,871 | 218,123,685 | 1,713,526,512 |
| 1920 | 861,116,234 | 467,010,867 | 153,780,378 | 326,737,337 | 1,808,644,816 |
| 1919 | 848,767,153 | 426,649,086 | 137,310,618 | 339,607,932 | 1,752,334,789 |
| 1918 | 819,164,298 | 380,244,880 | 109,896,874 | 324,107,476 | 1,633,413,528 |

# PART II.—CHATTEL MORTGAGES.

Table showing by County Municipalities of Ontario the total number and amount of Chattel mortgages on record and undischarged on December 31st, 1922, against (1) all occupations; (2) farmers; together with totals for the Province for the past four years.

| Counties and Districts. | Chattel mortgages against all occupations. | | | | Chattel mortgages against farmers. | | | |
|---|---|---|---|---|---|---|---|---|
| | To secure existing debt. | | For future endorsation. | | To secure existing debt. | | For future endorsation. | |
| | No. | Amount. | No. | Amount. | No. | Amount. | No. | Amount. |
| | | $ | | $ | | $ | | $ |
| Algoma | 233 | 228,085 | 3 | 8,000 | 91 | 38,314 | ... | ... |
| Brant | 166 | 336,668 | ... | ... | 73 | 56,125 | ... | ... |
| Bruce | 208 | 174,503 | ... | ... | 119 | 101,673 | ... | ... |
| Carleton | 304 | 455,492 | 3 | 5,568 | 31 | 53,763 | 2 | 1,600 |
| Cochrane | 27 | 25,054 | ... | ... | 2 | 986 | ... | ... |
| Dufferin | 60 | 94,863 | 1 | 1,000 | 37 | 27,200 | 1 | 1,000 |
| Elgin | 222 | 287,215 | ... | ... | 112 | 82,517 | ... | ... |
| Essex | 382 | ‡701,243 | ... | ... | 137 | 127,128 | ... | ... |
| Frontenac | 236 | 251,542 | ... | ... | 155 | 140,375 | ... | ... |
| Grey | 317 | 321,671 | ... | ... | 217 | 144,261 | ... | ... |
| Haldimand | 96 | 101,233 | ... | ... | 42 | 41,514 | ... | ... |
| Haliburton | 31 | 24,813 | ... | ... | 28 | 11,284 | ... | ... |
| Halton | 73 | 78,475 | ... | ... | 35 | 28,351 | ... | ... |
| Hastings | 291 | 431,179 | ... | ... | 141 | 85,818 | ... | ... |
| Huron | 123 | 161,490 | ... | ... | 61 | 70,466 | ... | ... |
| Kenora | 47 | 75,003 | ... | ... | 16 | 8,998 | ... | ... |
| Kent | 332 | *778,588 | 18 | 44,655 | 174 | 166,374 | 12 | 24,640 |
| Lambton | 178 | 203,448 | ... | ... | 63 | 55,494 | ... | ... |
| Lanark | 116 | 107,767 | ... | ... | 47 | 37,740 | ... | ... |
| Leeds and Grenville | 282 | 246,249 | ... | ... | 202 | 182,172 | ... | ... |
| Lennox and Addington | 117 | 188,833 | ... | ... | 75 | 55,398 | ... | ... |
| Lincoln | 147 | 279,645 | ... | ... | 62 | 54,056 | ... | ... |
| Manitoulin | 108 | 66,546 | ... | ... | 88 | 35,889 | ... | ... |
| Middlesex | 193 | 281,219 | ... | ... | 65 | 87,800 | ... | ... |
| Muskoka | 116 | 188,438 | ... | ... | 54 | 24,803 | ... | ... |
| Nipissing | 242 | 214,999 | ... | ... | 128 | 79,390 | ... | ... |
| Norfolk | 161 | 219,068 | 3 | 81,892 | 117 | 152,972 | ... | ... |
| Northumberland and Durham | 253 | 246,478 | ... | ... | 135 | 100,495 | ... | ... |
| Ontario | 126 | 138,294 | ... | ... | 71 | 55,337 | ... | ... |
| Oxford | 157 | 169,393 | ... | ... | 106 | 126,448 | ... | ... |
| Parry Sound | 137 | 200,770 | 2 | 2,075 | 69 | 50,277 | ... | ... |
| Peel | 41 | 64,822 | ... | ... | 27 | 40,890 | ... | ... |
| Perth | 118 | 196,432 | 1 | 31,091 | 44 | 53,058 | ... | ... |
| Peterborough | 156 | 148,529 | 1 | 450 | 75 | 36,442 | ... | ... |
| Prescott and Russell | 213 | 195,536 | ... | ... | 126 | 101,626 | ... | ... |
| Prince Edward | 129 | 144,443 | ... | ... | 94 | 93,317 | ... | ... |
| Rainy River | 68 | 65,137 | ... | ... | 43 | 36,180 | ... | ... |
| Renfrew | 183 | 195,592 | ... | ... | 100 | 88,253 | ... | ... |
| Simcoe | 402 | 560,707 | ... | ... | 259 | 145,760 | ... | ... |
| Stormont, Dundas and Glengarry | 312 | 295,378 | 18 | 9,198 | 210 | 204,079 | 12 | 6,234 |
| Sudbury | 487 | 513,518 | ... | ... | 310 | 171,980 | ... | ... |
| Thunder Bay | 148 | †468,139 | ... | ... | 47 | 24,798 | ... | ... |
| Timiskaming | 533 | 579,800 | 5 | 9,350 | 266 | 48,143 | 2 | 1,150 |
| Victoria | 63 | 49,937 | 1 | 1,800 | 37 | 22,603 | ... | ... |
| Waterloo | 145 | 232,948 | ... | ... | 35 | 34,390 | ... | ... |
| Welland | 174 | 161,842 | ... | ... | 41 | 29,100 | ... | ... |
| Wellington | 141 | 245,615 | ... | ... | 70 | 154,407 | ... | ... |
| Wentworth | 418 | 547,770 | ... | ... | 59 | 58,106 | ... | ... |
| York | 3,032 | 3,146,614 | ... | ... | 115 | 98,122 | ... | ... |
| The Province: | | | | | | | | |
| 1922 | 12,244 | 15,091,023 | 56 | 195,079 | 4,705 | 3,724,672 | 29 | 34,624 |
| 1921 | 10,375 | 13,998,014 | 47 | 293,036 | 3,743 | 3,016,280 | 15 | 32,051 |
| 1920 | 8,775 | 12,975,031 | 36 | 607,524 | 3,042 | 2,698,383 | 17 | 22,802 |
| 1919 | 8,350 | 15,402,519 | 40 | 1,357,875 | 3,457 | 2,439,536 | 12 | 10,926 |

* Including one miller for $150,000, and a theatre company for $201,850. A copy of this latter instrument was filed in Lambton and Lincoln, but is not included in the totals for those counties. † Including one rancher for $247,000. ‡Including one Turf Club for $125,000.

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